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PROCEEDINGS

OF THE

AMERICAN SOCIETY

OF

CIVIL ENGINEERS

VOL. XLV—No. 3



March, 1919

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852.

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

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MINUTES OF MEETINGS
OF THE SOCIETY

February 19th, 1919.—The meeting was called to order at 8:30 P. M.; President Curtis in the chair; T. J. McMinn, M. Am. Soc. C. E., acting as Secretary; and present, also, 325 members and guests.

Nathan C. Johnson, Assoc. M. Am. Soc. C. E., addressed the meeting on the subject, "New Developments in Concrete", illustrating his remarks with lantern slides and moving pictures.

The subject was discussed informally by many of those present.

The following deaths were announced:

RUFUS CAMERON HUNT, of Washington Court House, Ohio, elected Member, October 5th, 1904; died February 18th, 1919.

HIRAM JOSEPH SLIFER, Lt.-Col., Engrs., U. S. A., of Chicago, Ill., elected Member, June 5th, 1907; died in service (France), February 3d, 1919.

ALEXANDER CHARLES SCHILLING, of Severn, N. C., elected Associate Member, June 18th, 1918; died February 4th, 1919.

Adjourned.

March 5th, 1919.—The meeting was called to order at 8.30 P. M.; Charles Macdonald, Past-President, Am. Soc. C. E., in the chair; T. J. McMinn, M. Am. Soc. C. E., acting as Secretary; and present, also, 208 members and guests.

The minutes of the Annual Meeting, January 15th, 1919, and of the meeting of February 5th, 1919, were approved as printed in *Proceedings* for February, 1919.

C. E. Fowler, M. Am. Soc. C. E., suggested the appointment of a temporary committee, to confer with the American Railway Engineering Association, at its Chicago meeting on March 17th, 1919, as to the adoption of a new column formula, and also in reference to train loadings. On motion, duly seconded, the whole matter was referred to the Board of Direction.

Mr. Vladimir V. Goriachkovsky, formerly Chief Engineer and Builder of the Murman Railroad, addressed the meeting on "Engineering Construction in Russia, and General Conditions in that Country from the Viewpoint of an Engineer," illustrating his remarks with lantern slides.

The subject was discussed by Messrs. J. E. Greiner, T. Kennard Thomson, and N. Nicolai.

The following deaths were announced:

HOLLAND WILLIAMS BAKER, of Columbus, Ohio; elected Member, May 7th, 1890; died February 18th, 1919.

WILLIAM THOMAS DOUGAN, of New York City; elected Member, October 2d, 1907; died February 3d, 1919.

FRANK CHURCHILL HORN, of Boise, Idaho; elected Member, September 1st, 1903; died February 16th, 1919.

ROBERT EDGAR MILLIGAN, of Newark, N. J.; elected Member, March 4th, 1914; died February 25th, 1919.

JOHN CHRISTIAN OSTRUP, Maj., Engrs., U. S. A., of New York City; elected Associate Member, March 4th, 1896, Member, March 1st, 1899; died in Service, February 27th, 1918.

CHARLES H. KNOWLES, of Los Angeles, Cal.; elected Associate Member, September 2d, 1914; died February 20th, 1919.

JAY WILLIAM TOMS, of Denver, Colo.; elected Junior, November 30th, 1909; died December 20th, 1918.

Adjourned.

OF THE BOARD OF DIRECTION

(Abstract)

March 11th, 1919.—The Board met at 10.54 p. m., immediately after the adjournment of the Membership Committee; President Curtis in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Crocker, Elwell, Flinn, A. M. Hunt, Langthorn, Lewis, Metcalf, Rights, Tuttle, and Wagner.

Ballots for membership were canvassed resulting in the election of 16 Members, 46 Associate Members, 1 Associate, and 7 Juniors, and the transfer of 11 Juniors to the grade of Associate Member.

Thirteen Associate Members were transferred to the grade of Member. A report from the Membership Committee was received and acted upon.

Adjourned.

THE AMERICAN SOLDIER

ADDRESS BY BRIG.-GEN. S. T. ANSELL, U. S. A.,

AT THE SIXTY-SIXTH ANNUAL MEETING OF THE

AMERICAN SOCIETY OF CIVIL ENGINEERS,

JANUARY 16TH, 1919.

I was at first much pleased by your invitation, but, alas, it was a case, as is so often true, where grief quickly treads upon the heels of pleasure. When, for the benefit of the programme, if for no greater interest, the authoritative inquiry came for the title of the subject upon which I proposed to address you, pleasure then ceased and gave way to infinite pain and embarrassment. Such is my mortification, even in this hour. Even when Mr. Gardiner, an old-time West Point associate of mine, so courteously asked of me my plan for the evening, evidently suggesting an amiable desire to entertain me, in my confusion and embarrassment, I was still unable to make any response. In a word, I have no subject—no plan. I find myself like a rudderless ship in an uncharted ocean, without compass or destination. Still, must I land somewhere, on something, or, indeed, be landed upon. Were I true to the characteristics of the Englishman—as some one has described his natural reticence—having nothing to say, I should say nothing. Such a philosophical resolution must, however, be seasonably formed. At this late day I am estopped from such a happy choice. Something must be said here and now. Would that I could have prayed to some Pagan power (as was the custom of old) that some thought might strike me.

The programme of the Society for these meetings has, naturally enough, a distinctly military flavor. I observe that several of your speakers are officers of the Army, selected, doubtless, out of an appropriate regard, not only for the present prevalent interest in the Army, but also for the reason that the operations of the Army and military maintenance peculiarly involve matters and problems of the Engineering Profession, as is evidenced by the fact that many great soldiers have been great engineers and many great engineers have been great soldiers. That there is a kinship between the two professions—speaking of them as professions in a technical sense—cannot be denied. It is universally attested by all history. This fact brings no consolation to me, however, inasmuch as it has been amply demonstrated in every educational institution attended by me that a clam will become capable of cutting a caper long before my mental makeup can endow me with engineering appreciations. It may well be, however, that the introduction of a foreign element here may result, not in the usual physical phenomenon in such cases—the generation of friction—but may serve to

divert in a slight, if not helpful, degree, the mind of this meeting from the serious subjects of the profession.

In my judgment, the curse, in a sense, of every profession is its professionalism. There is in almost every profession a particularism that disrespects the environing relation; a universal tendency to segregate from society at large, rather than integrate with it and serve it; a tendency to ignore the civic reasons for its existence; a professional habit to regard the profession as an end in itself, rather than as a means toward social well being. This is particularly true of the two professions to which, in a hermaphroditic and imperfect sense, I myself may be said to belong—the military and the law. Doubtless it can be said with less truth of yours, a utilitarian profession, than any other, if indeed it can be said of it at all.

All professions and all organized human activities are organically inter-dependent. Not only must each contribute its share to the common good, all must be mutually helpful; they must co-operate. This necessitates a mutual interest and something of a common understanding. It has always seemed to me that this lack of common understanding, mutual appreciations and sympathies, has had a considerable retarding influence, not only upon social and political development, but upon professional development itself. Getting somewhat more concrete: The Army itself has suffered, and, for the same reason, the nation doubtless has suffered, because professional men and the people have had so little, or such an incorrect, understanding of the Army as it heretofore existed, and because the Army has had an equally imperfect comprehension of the people and their predispositions and prejudices, and the great current and forces of their purposes.

Professions, in their relations to war or any other great national effort, can no longer stand apart. War is no longer fought by a few trained gladiators, a few selected men to represent an entire nation in a struggle with other nations. The war that is about to be brought to a close and the wars that are to come hereafter (if, unfortunately, such shall come) will be fought by entire nations. National energy will be mobilized and catapulted at the opposing nation. Nations, in a very real sense, will become armed camps. The art and science of war, as war is practiced now and as it will be practiced hereafter, will have to be redefined. Heretofore such a definition had reference to the narrow subject of the Army. Now, it would have to include everything behind the line. If the art and science of war are to be regarded as a thing apart, it is a science of a double aspect, as it were. First, the science of organizing and using national energy for the purpose of redressing a national wrong by every legitimate means, principally force. Secondly, the organization and use of the Army as the principal instrument whereby the force is dealt. One experiences considerable difficulty now in distinguishing between the citizen in the Army and the citizen at

work for the Army. National appreciations are becoming sufficiently broad to include both as soldiers. There is less of a tendency to make invidious distinctions between essentials. Time was when the soldier at the front was the only hero, but we now clearly see that there are heroes behind the line. If the profession of arms is to be regarded as a profession at all, it should be regarded as that profession that calls upon all other professions, vocations, and activities, and converts them to the uses of war.

I suppose I am expected to speak upon something concerning the Army, in the narrow sense, and yet, notwithstanding that the Army is not an unknown subject to me, I find it difficult to speak upon it, and I am quite sure that I cannot do so entertainingly. To adopt the expressive language of the street, I am "fed up" upon it and I believe that you also are. You have heard so much about our army and its wonderful deeds; you are familiar with the novel methods whereby it was raised; you have heard how wonderfully and how quickly it was organized; you have heard, and as engineers can peculiarly appreciate, the Herculean task involved in transporting and maintaining it in fighting efficiency overseas; you have heard with thrills of patriotic pride how bravely it fought to a speedy and victorious conclusion; you know all about the problems of material, personnel, transportation, and the general mechanics involved in raising and maintaining an Army; you surely must have been sickened with the horrors and tragedies of war.

Of course, I have heard all these things; and, rather more intimately than you, I know these things. I had the good fortune to be engaged in observing our Army in France for a space of something like three months. I should be incapable of registering impressions, if I had not registered many. My brief period of service there had a wonderful effect upon me. As a result of it, I believe that I am a better man, a better American, a better officer. Having seen the hills and dales of France made sacred by the blood of many heroes, and her wide-spread ruins wrought by this atrocious strife, I can the better appreciate and give some application to the statement once made by Johnson: "That man is little to be envied whose patriotism would not gain force upon the plains of Marathon, or whose piety would not grow warmer among the ruins of Iona."

I shall not speak of these material things, though it would be far easier to do so. I should like to speak of the things which are less frequently the subject of popular speech, and, perhaps, of popular reflection, but which to my mind count for far more in national military effort than the material side of the military establishment to which I have referred. I should like to invite your attention to what might crudely be called the peculiar intellectuality or personal spirit of this Army, the understanding of which may be of real practical military worth.

As I see it—and I hope it may not appear inappropriate for me to say it here—in our appreciations of the Army we pay too much respect to material elements and too little to the intellectual qualities and spirit that enter into the composition of this Army, and which, in my judgment, dominate it. We over-estimate the realistic elements and under-estimate those impalpable and subtle qualities of the soldiery which, in the mass, made the spirit and morale of the Army, gave it its peculiar National flavor, and enabled it, in my judgment, to attain efficiency and remarkable success under discouraging disadvantages and trying circumstances. I think it is not amiss to invite your attention for a moment to this side of the Army, and thus, in a sense, preserve the balance; for we have seen much of the outside and too little of the inside; we have observed the action of the Army rather than reflected upon its determination; we have been impressed with its power rather than by its moving impulse. In a word, we have taken of it an objective rather than a subjective view.

Such a view reveals, at most, but half. Notwithstanding that war seems to be a field in which, when superficially viewed, physical force seems to dominate, other and finer elements do in reality control, more so to-day and in the future than ever before. Formerly, war was in a sense but personal conflict on a large scale; to-day, and hereafter, war is and will be a striving between organized ideals. Although, with a single exception, our wars have always been motived in our political ideals, the present war necessitated the arming of such a vast number of our citizens that the Army has embodied within itself the characteristic qualities of our citizenship which lie at the base of military morale. These qualities of the citizens, carried with them into camp, are calculated to impress themselves upon, and to some extent to modify, the established regimen of the military establishment.

I have already adverted to the kinship between your profession and that of Arms. They both have been thought heretofore to deal largely with physical forces in fields in which the less palpable and subtler forces, which move men in other environments, have had little place. The education and training of the engineer and the military officer alike have had prime regard for this fact. Hereafter, I apprehend there will be less kinship between us. The adjunctive and technical services of the Army will doubtless continue to require the old mechanical training. They still will deal largely with things and will drive the human agencies as bits of mechanism to perform them. Not so with the fighting forces. Military leadership, hereafter, must regard men of Arms, not as machines, but as human beings, with human capacities, impulses, and ideals; must have a larger appreciation of the qualities of citizenship, which project themselves over and into the military status, which were not doffed as the uniform was donned. In a large sense, all the great captains have had this quality, though it

was not a requirement or objective of orthodox military training. The commander is a commander of men, not machines. He must have those qualities which will enable him to appreciate and utilize the qualities and ideals of his men. Only thereby can he inspire them to reach the great heights which American citizens are capable of reaching when properly understood and properly led, heights at which they become as indomitable as the spirit which animates them.

In speaking of the Army, I, of course, speak of the new Army. The new Army belongs to the new era in warfare, wherein whole nations fight. It differs vastly, therefore, from any army this country has heretofore raised. If the people did not understand our old-time Army, it was for one reason—because it was too small to elicit their interest. If they do not understand this Army, it is rather because it was too large at birth, and our faculties have not kept pace with its growth. If the people did not understand the old Army, it was because it did not come from the people. If they do not understand the new Army, it is largely because it came from the people too abruptly.

The new Army, in its organic character, has a peculiar relationship to the old Army. If the old Army had never done anything else in all the world, it would deserve the lasting thanks and praise of the American people for the creation and direction of the new establishment. The old Army organized the new, gave it its standards and its traditions, so far as they could be given, gave it birth, as it were, and in doing so, itself died. The new Army, though theoretically the successor of the old, is a very different institution. It may have the text of the same laws for its government, but those laws will have to undergo many modifications in practice when applied to the new establishment. Such an army develops a new leadership and a new standard for discovering and estimating military qualifications. In the old Army's strength was its system. It was well trained and well organized. Its organizational system took the burden, and absorbed personal and particular deficiencies. The standard product of the system was the thing aimed at and obtained. Human quality was not its prime regard.

In such an army as the new Army, however, the laws will have to be applied with due allowance for the inherent differences. Systems of instruction will have to be modified to give the best results. The unimpaired reason back of the schoolmaster's method will not satisfy such an establishment. In such an army, reasoning methods, sympathetic methods, will give better, quicker, and more satisfactory results. Instruction cannot be handed out empirically to non-commissioned officers and men, leaving them to discover the reasons later in the course of a long service and full experience.

In such an army, there must be new tests and new determinations. In the old Army, the officers were especially trained to command. They were set aside for the purpose. The law gave them their training and

conclusively established their competency. The law jealously regarded their rights which, on the score of personal qualification, there was none to dispute. So it was, in a lesser sense, with the old non-commissioned officer. His place was also fixed by law. He came to it by reason of long and faithful service, and a consequent superior fitness; but, in the new establishment, mere conclusions of law and presumptions of fitness will be of less weight. Though aided by the authority of law, nevertheless every man exercising command will have to take his real place as a commander of men. In the long run, he will have to demonstrate his worth.

Such an army must be dealt with by those who have large sympathies and large appreciations. I think the mechanical education will hereafter take a less important place in the curriculum of military training, and will be superseded to some extent by a greater knowledge of the liberal arts, sciences, and humanities. It is doubtful if the education, and training, and experience of the engineer will hereafter be regarded so highly in the military profession. A study and knowledge of human beings, rather than machines, will be a necessary part of the professional training of officers of the army. The old-time regular, to a large extent, had in his hand the making of the new Army, the new officer, and none can deny that the task was well accomplished; but we Regulars, ourselves, have also learned and broadened. From the new man we have got new views and new appreciations. Doubtless the new man needed some of what the old man needs or can acquire from his new-made brother. We must understand, however, that we are in a different environment, with new men to handle, new methods to be applied. We must understand them and ourselves, their training and ours. Our education suited us exactly to the old establishment. However, it will need modifications to meet the military requirements of the future. For present purposes, it consists too much of the technical and purely utilitarian. Our course at West Point carried little or nothing of the humanities, little or nothing that quickens the sympathies and arouses the imagination. Indeed, it excluded those qualities. Sympathy and imagination, these are the two qualities we must possess, to be at our best in the new establishment. Without sympathy and an appreciation of the human qualities we shall be at some disadvantage in dealing with human beings who are not and never will be machine made. The new officer is largely a college man, with an individualism over-developed. College insists upon such development. College has nothing or little of immediate practical value in its curriculum. It aims to cultivate the esthetic side, the sympathies, the imagination—all this in order that human beings may be interested and influenced. Much of this is of great military worth, and, whether of military worth or not, it is there to be dealt with. Some of it may be modified out of military existence, and some of it will last and remain

a permanent and strengthening element in the new establishment. We must widen the scope of our sensibilities until it shall include an appreciation of the common humanities. What a rare opportunity we regulars have had, an opportunity to serve our God and our country; to establish ourselves in the affections of this great popular Army, and, through it, in the everlasting esteem of our people.

We must have this breadth of appreciation if we are to understand our present military establishment. The spirit of this new Army was the spirit which caused it to win. It was a spirit pervaded by an unprecedented sense of equality. It was a spirit upon which rank, power, and earthly circumstance did not as such impress themselves. It was the spirit of personal democracy; a student of the classics and a mule driver became chums, and each gained much from the other. The society man, the club man, the college man, the farm lad, and the man who had been engaged in menial labor all touched elbows in their daily associations, and in each was bred a spirit of generosity and respect for the other which served as the keystone of the strength of this remarkable human structure. They were all inspired with the great pride of nation and race. They realized that this was the first time that an American Army had ever been exhibited to the world. They insisted that it should lose nothing in the exhibition.

The Army, upon its demobilization, will be the means of disseminating such a spirit throughout the land. All classes fought for a common cause, a cause that was higher than that of any class. Will men who have once been dominated by such a spirit lay it down upon the resumption of their civil status? If so, the nation will have been the great loser. If so, it would seem that the spirit of patriotism exists for but an occasion—and that occasion is war—and does not pervade our civil activities and vocations which, if they but be pursued in the spirit that characterized this Army, must bring happiness, prosperity, liberty, and all the blessings of government.

ITEMS OF INTEREST

United Engineering Society

Extracts from Treasurer's Annual Report

For Year Ending December 31st, 1918.

The Surplus Account, on December 31st, 1917, showed a balance of \$8 116.10. This amount has been increased by the surplus from the operating accounts during the year, of \$5 417.33, making a total on December 31st, 1918, of \$13 533.43. Of this amount, \$8 000.00 has been transferred to Depreciation and Renewal Fund, leaving a balance in Surplus Account of \$5 533.43.

The Gross Operating Expenses for the year 1918 were \$66 505.57.

The General Operating Expenses during the year 1917 were \$53 791.97, showing an increase for the year 1918 of \$12 713.60, partly due to the three additional stories first occupied in October, 1917.

The funds available for the Library Board, and spent under its direction during the year, amounted to \$28 740.29.

The General Reserve Fund of \$10 000, created by the Board of Trustees at a meeting held November 18th, 1914, to be available to take care of unforeseen fluctuations of income and outlay, has been preserved intact, there arising no calls on this fund during the year 1918.

The Depreciation and Renewal Fund at the beginning of the year 1918 amounted to \$75 037.41. During the year this fund has been increased by the sum of \$3 126.37 for interest earned by the investments for this fund during the year and accruals, and by \$8 000.00 added from the surplus at the end of the year, making a total of \$86 163.78 on December 31st, 1918.

In accordance with the authorization of the Board of Trustees, September 26th, 1918, the sum of \$10 000 was invested in Fourth Liberty Loan 4½% Gold Bonds.

The following summary shows the amounts of the funds held by the United Engineering Society as of December 31st, 1918:

| | |
|---|--------------------|
| Depreciation and Renewal Fund, December 31st, 1917..... | \$75 037.41 |
| Interest on invested funds during the year 1918..... | 3 126.37 |
| Transfer for the year 1918..... | 8 000.00 |
| Total | \$86 163.78 |
| General Reserve Fund..... | 10 000.00 |
| Engineering Foundation Fund..... | 303 374.80 |
| Library Endowment Fund..... | 102 559.70 |

ASSETS AND LIABILITIES

December 31st, 1918.

ASSETS

| | |
|---|----------------|
| Real estate | \$1 947 171.16 |
| Investments, Engineering Foundation Fund..... | 303 321.25 |
| Investments, Library Endowment Fund..... | 102 297.50 |
| Investments, General Fund..... | 85 725.00 |
| Cash | 12 869.60 |
| Petty cash..... | 100.00 |
| Unexpired insurance | 5 958.76 |
| Accrued interest receivable..... | 2 392.02 |
| Accounts receivable, general..... | 542.58 |
| Bills receivable..... | 12 500.00 |

\$2 472 877.87

LIABILITIES

| | |
|---|----------------|
| Founders equity in property..... | \$1 947 171.16 |
| Due the General Reserve Fund..... | 10 000.00 |
| Due the Depreciation and Renewal Fund..... | 86 163.78 |
| Due the Library Endowment Fund..... | 102 559.70 |
| Due the Engineering Foundation Fund..... | 303 374.80 |
| Due for notes payable, A. S. M. E..... | 12 500.00 |
| Due for accounts payable..... | 2 090.24 |
| Due for Library 1918 unexpended balance..... | 274.26 |
| Due for Library Service Bureau 1918 surplus..... | 800.29 |
| Due for Engineering Council 1918 unexpended balance | 2 410.21 |
| Surplus (December 31st, 1918)..... | 5 533.43 |

\$2 472 877.87

Report of Members on Naval Consulting Board.

"NEW YORK, FEB. 27, 1919.

"MR. CHARLES WARREN HUNT, *Secretary,*

American Society of Civil Engineers,

33 West 39th Street, New York, N. Y.

"DEAR SIR: As the official nominees and representatives of the American Society of Civil Engineers on the Naval Consulting Board of the United States, the undersigned beg to submit the following report of the Board's activities during the year ending December 31, 1918. It will be realized that on account of the confidential nature of the duties performed by the Naval Consulting Board, its members would not be justified in making a full report as to its activities. We are therefore obliged to confine ourselves to the statements made concerning the Board by the Secretary of the Navy in his last Annual Report, which follow.

"Yours truly,

"ALFRED CRAVEN,

"Member, Naval Consulting Board.

"A. M. HUNT,

"Member, Naval Consulting Board."

ANTI-SUBMARINE DEVICES.

"The Department has been keenly appreciative of the necessity of employing every effort to develop devices with which to combat the enemy's submarine operations. Advices and suggestions were freely requested and carefully considered by the department, the Naval Consulting Board, the National Research Council, the various bureaus and departments, the General Board of the Navy, and other boards in Washington.

"In order to co-ordinate the efforts in this matter the department appointed a special board of officers to have complete charge of carrying out experiments on anti-submarine devices. The General Electric Co., the Western Electric Co., and the Submarine Signal Co. patriotically offered every assistance in this work, and with a fine spirit of co-operation have rendered valuable service.

"An experimental station was established at New London, Conn., under the supervision of the special board, and many scientists of unusual attainments were assembled there in connection with the experiments and developments of devices for detecting submarines. The naval activities at New London, Conn., embrace also a station for assembling and installing various devices developed and training the personnel for the efficient employment of such devices afloat. The results achieved by these methods have been most gratifying; and the operations of vessels fitted with these devices both abroad and in home waters, has had a marked effect in restricting submarine operations.

DEVELOPING INVENTIONS AND DEVICES.

"The work of the Naval Consulting Board has increased greatly in both importance and volume during the past years. In addition to work especially adapted to naval uses, the members have assisted in almost every field of research, and Mr. Thomas A. Edison, president of the board, is still devoting his entire time and his laboratory to war work.

More than 110 000 ideas, inventions and devices have been considered by this board and the department, either separately or conjointly; there have been 4 200 interviews on inventions and upwards of 700 models have been examined. In addition, at the Chicago branch office 2 300 interviews have been granted and 2 500 communications investigated. This gives an idea of the volume of this work and the care that is taken in considering and investigating every invention or suggestion that gives promise of being of any value.

BULLETINS ON SUBMARINE AND AVIATION.

"A very complete bulletin on the enemy submarine has been prepared, after the most careful study and compilation of all data, and was issued under date of May 1, 1918. This gave all but the most confidential information on the subject and has served as a guide to the country at large in making suggestions. A second bulletin on the subject of aeronautics, composed of articles prepared by a number of the best authorities on the subject, was issued on August 1, 1918. This pamphlet included a carefully prepared bibliography that is complete and exhaustive and gives the student in aviation a most valuable fund of information.

"During the past year the war committee of technical societies, composed of representatives of the great engineering societies, associated themselves with the Naval Consulting Board and their chairman, Mr. David W. Brunton, was elected a member of the board.

"With the erection and occupancy of the New Navy Building, space was provided for the resident member and a staff of examiners directly connected with the office of the Secretary of the Navy, and all the files and correspondence have been concentrated in one location, bringing the examination and consideration of ideas and inventions in closer touch with the Navy Department. The office of the Board is in charge of Mr. Brunton, who is also a member of the advisory committee to the inventions section of the General Staff of the Army, and there is established a close working basis of handling all ideas presented to the attention of the proper authorities with the least effort and by a very direct route. This has not only resulted in increased efficiency, but in a reduction of expenditure of funds and time consumed.

SUBJECTS THAT HAVE BEEN STUDIED.

"Among the subjects studied by the Board were: Aeronautics, propellers for airplanes, stabilizing and controlling devices, and an instruction machine that has been adopted for use; optical glass, improvements in quality and production; ordnance equipment; anti-submarine defensive devices and offensive instruments; internal combustion engines, refined hydrocarbon fuel for airplane engines giving greater efficiency and longer life to machines, and methods of coal combustion looking to higher economy.

"When the department called for classes of electrical and mechanical engineers from which to select a number of commissioned officers for active service, the board was of material assistance in its prompt and efficient handling of the situation, and as a result the Navy was enabled to obtain an excellent selection of able and experienced officers.

"The officers and members of this board give their time and talents, many of them to the exclusion of their private business, from a desire to render a patriotic and disinterested service. They are entitled not only to the thanks of the department, but of the large number of other agencies and individuals that have benefited by their counsel and advice.

"Approved
JOSEPHUS DANIELS."

Letters to Governors of States

Under date of January 30th, 1919, the Secretary of the American Society of Civil Engineers sent the following letter to the Governor of each State:

"NEW YORK, JANUARY 30TH, 1919.

"SIR: State and municipal authorities, corporations, and individuals who now have, or expect in the near future to have, need for the services of professional engineers are requested to communicate their wants immediately to the Engineering Societies Employment Bureau, 33 West 39th Street, New York City. This Bureau is maintained by the

four National Societies of Civil, Mining, Mechanical, and Electrical Engineers.

"A number of engineers who have been serving in the Army or in Government capacities during the war are about to be released from their present duties. It is the desire of the Engineering Societies to place these engineers in touch with contemplated projects as early as practicable.

"In the present emergency the lack of openings for civil engineers has been observed, and it is to provide, if possible, for these men that this notice is issued.

"AMERICAN SOCIETY OF CIVIL ENGINEERS,

"CHAS. WARREN HUNT,

"Secretary."

"To the Hon. _____
Governor of _____

A number of replies have been received which indicate that interest in a revival of construction is being taken by the chief executives of the various States.

A similar letter also was sent by the Secretary to the more prominent daily newspapers, many of which published articles based on the information given.

The John Fritz Medal

The John Fritz Medal was established by the professional associates and friends of the late John Fritz, Hon. M. Am. Soc. C. E., of Bethlehem, Pa., on August 21st, 1902, his eightieth birthday, to perpetuate the memory of his achievements in industrial progress. The medal is awarded for notable scientific or industrial achievement. There is no restriction on account of nationality or sex. The medal is of gold and is accompanied by an engraved certificate which recites the origin of the medal and the specific achievement for which the award was made. The medal may be awarded annually, but not oftener. No award shall be made to any one whose eligibility to the distinction has not been under consideration by the Board of Award for at least one year. The award is made by a Board of sixteen appointed in equal numbers from the membership of the four National Societies: American Society of Civil Engineers, American Institute of Mining Engineers, American Society of Mechanical Engineers, and American Institute of Electrical Engineers.

The John Fritz Medal has been conferred upon the following distinguished Engineers:

1902—John Fritz, for scientific and industrial achievement.

1905—Lord Kelvin, for work in cable telegraphy and other general scientific achievements.

1906—George Westinghouse, for the invention and development of the air-brake.

1907—Alexander Graham Bell, for the invention and introduction of the telephone.

1908—Thomas Alva Edison, for the invention of the duplex and quadruplex telegraph; the phonograph; the development of a commercially practical incandescent lamp; the development of a complex system of electric lighting, including dynamos, regulating devices, underground system, protective devices and meters.

1909—Charles Talbot Porter, for his work in advancing the knowledge of steam engineering and improvements in engine construction.

1910—Alfred Noble, for notable achievements as a civil engineer.

1911—Sir William Henry White, for notable achievements in naval architecture.

1912—Robert Woolston Hunt, for his contributions to the early development of the Bessemer process.

1914—John Edson Sweet, for his achievements in machine design; and for his pioneer work in applying sound engineering principles to the construction and development of the high-speed steam engine.

1915—James Douglas, for notable achievements in mining, metallurgy, education and industrial welfare.

1916—Elihu Thomson, for achievements in electrical invention, in electrical engineering and industrial development, and in scientific research.

1917—Henry Marion Howe, for his investigations in metallurgy, especially in the metallography of iron and steel.

1918—J. Waldo Smith, for distinguished services in engineering and achievement as an engineer in providing the City of New York with a supply of water.

Engineers' Registration Act for Oregon

The following copy of the Engineers' Registration Act for Oregon is printed for the information of the membership. The Act has just been passed by the Legislature of that State. The Governor has not yet signed the bill, but, as he has spoken favorably of the measure, there is little doubt that it will receive his signature. The bill was drawn originally by a Committee appointed by the four Founder Societies,* and sponsored by the Northwestern Society of Highway Engineers, the Oregon Society of Engineers, and, in part, by the Portland, Oregon, Association of Members of the American Society of Civil Engineers. It was, in general, favored by the younger members of the Portland, Oregon, Association, and opposed by the older and more conservative members:

"A Bill for an Act to Provide for the Registration of Professional Engineers, Creating a Board of Engineering Examiners and Defining

* The work of this Committee, while never formally adopted by any of the individual Societies, has been justified by the practical adoption in this and other States of the tentative bill prepared by it.—Secretary.

Their Duties, Fixing the Fees for Registration, Fixing the Penalties for Violations, and Making the Necessary Appropriations.

"Be it Enacted by the People of the State of Oregon:

"Section 1. Definitions.—As used in this Act:

"1. The 'board' means the state board of engineering examiners provided for by this Act.

"2. A person practices professional engineering within the meaning of this Act who practices any branch of the profession of engineering other than military engineering. The practice of said profession embraces the design and the supervision of the construction of public and private utilities such as railroads, bridges, highways, roads, canals, harbors, river improvements, lighthouse, wet docks, drydocks, ships, barges, dredges, cranes, floating docks and other floating property, the design and the supervision of the construction of steam engines, turbines, internal combustion engines and other mechanical structures, electrical machinery and apparatus, and of works for the development, transmission or application of power, the design and the supervision of mining operations and of processes and apparatus for carrying out such operations, and the design and the supervision of the construction of municipal works, irrigation works, water supply works, sewerage works, drainage works, industrial works, sanitary works, hydraulic works and structural works and other public or private utilities or works which require for their design or the supervision of their construction such experience and technical knowledge as are required in Section 8 of this Act for admission to examination. The enumeration of any public or private utilities or works in this section shall not be construed as excluding any other public or private utilities or works which require such experience and technical knowledge for their design or the supervision of their construction. The execution as a contractor of work designed by a professional engineer or the supervision of the construction of such work as a foreman or superintendent for such a contractor shall not be deemed to be the practice of professional engineering within the meaning of this Act.

"3. 'Professional engineer' means any person who practices professional engineering.

"Section 2. Qualifications.—After January first, nineteen hundred and twenty, no person shall practice professional engineering without having first been duly and regularly registered by the board as a professional engineer as required by this Act nor shall any person practice professional engineering whose authority to practice is revoked by the board; after January first, nineteen hundred and twenty, every map, plan and drawing required by law to be certified or approved by a professional engineer shall be certified or approved by a professional engineer duly and regularly registered by the board as a professional engineer as required by this Act and shall bear the date and the number of the certificate of registration of such professional engineer; and after January first, nineteen hundred and twenty, no diploma or certificate conferred on or granted to a person other than a certificate issued under this Act by the board or its secretary shall be lawful authority for the practice of professional engineering.

"Section 3. The state board of engineering examiners.—There shall be a state board of engineering examiners consisting of nine members

to be appointed by the governor. Of the members of the board first appointed hereunder three shall hold office until July first, nineteen hundred and twenty-one, three shall hold office until July first, nineteen hundred and twenty-three, and three shall hold office until July first, nineteen hundred and twenty-five; and the term of office of each member so appointed shall begin on July first, nineteen hundred and nineteen. Upon the expiration of each of such terms one term of office of each member thereafter appointed shall be six years from July first. The governor may remove any member of the board for misconduct, incapacity or neglect of duty. Vacancies in the board caused by death, resignation or removal from office shall be filled by appointment by the governor for the unexpired term. Each member of the board shall be a professional engineer of at least ten years' active experience and of recognized good standing in his profession, shall be at least thirty-five years of age and shall have been a resident of this state for at least one year immediately preceding his appointment. Each member of said board, except the members first appointed hereunder, shall also be a registered professional engineer. The members of the board shall serve without compensation except traveling and other necessary expenses.

"Section 4. Certificate of appointment; oath; powers.—Every member of the board shall receive a certificate of his appointment from the governor and before beginning his term of office shall file with the secretary of state the constitutional oath of office. Each member of the board first appointed hereunder shall receive a certificate of registration under this Act from said board. The board or any committee thereof shall be entitled to the counsel, advice and services of the attorney general, shall have power to compel the attendance of witnesses, and may take testimony and proofs concerning all matters within its jurisdiction. The board shall have an official seal to be furnished and provided by the secretary of state. The board may make all by-laws and rules not inconsistent with law needed in performing its duties; but no by-law or rule by which more than a majority vote is required for any specified action by the board shall be amended, suspended or repealed by a smaller vote than that required for action thereunder.

"Section 5. Officers; meetings; quorum.—The board shall biennially elect from its members a president and a vice-president for the ensuing biennial term. The board shall appoint a secretary, who shall not be a member of the board, but who shall possess the qualifications required by this Act for members thereof. The secretary shall hold office during the pleasure of the board and shall receive an annual compensation of twelve hundred dollars (\$1 200.00). He shall give a bond in such amount and with such sureties as may be approved by the state board conditioned for the faithful performance of his duties and for the accounting for, and payment over of, all moneys received by him. The secretary shall keep on file in the office of the board a record of all certificates of registration issued, and he shall receive and account for all fees derived from the operation of this Act. He shall also perform such other duties as may from time to time be assigned to him by the board.

"The board shall hold at least six stated meetings in each year. Special meetings may be called in such manner as the by-laws of the board may provide. Notice of all meetings shall be given in such a

manner as the by-laws of the board may provide. At any meeting of the board held solely for the examination of candidates for registration three members shall constitute a quorum; but if three or more members shall not attend at the time and place fixed for such meeting, the member or members present may adjourn the meeting from time to time until a quorum be present. At all other meetings a majority of the board shall constitute a quorum.

"Section 6. Additional employees and officers.—The board shall have power to employ, during its pleasure, such clerks and other employees and to rent such offices as may be necessary to the proper performance by it of its duties as in this Act prescribed.

"Section 7. Payment of salaries and expenses; report.—The fees derived from the operation of this Act shall be paid into a special fund in the state treasury, to be known as the Engineer's Registration Fund, which is hereby created. Warrants for the payment of salaries and expenses incurred shall be issued by the Secretary of State and paid by the state treasurer out of the Engineer's Registration Fund, upon presentation of vouchers regularly drawn and approved by the president and the secretary of the board. On or before the first day of February in each year beginning in the year nineteen hundred and twenty-one the board shall submit to the legislature a written report of its proceedings for the preceding year and shall file with the Secretary of State a copy of said report together with a complete statement of the receipts and expenditures of the board for the preceding year, verified by the oath of the secretary, and a complete list of all persons registered to practice professional engineering under this Act with their addresses and the dates of their certificates of registration.

"Section 8. Admissions to examinations.—The board shall admit to examination any candidate who pays a fee of ten dollars (\$10.00) and submits evidence verified by oath and satisfactory to the board, that he

"1. Is more than twenty-one years of age,

"2. Is of good character, and

"3. Has been engaged upon engineering work for at least six (6) years and during that period has had charge of engineering work, as principal or assistant, for at least one year.

"4. Or, in lieu of the third requirement specified above, is a graduate from an engineering school of recognized good reputation and has been engaged upon engineering work for at least four years and during that period has had charge of engineering work, as principal or assistant, for at least one year.

"Section 9. Examinations.—Examinations for registration shall be held at stated or special meetings of the board at such times and at such places within this state in each year as the board shall determine. The scope of the examinations and the methods of procedure shall be prescribed by the board. The examinations may be either oral or written or partly oral and partly written. As soon as practicable after the close of each examination the members of the board who shall have conducted such examination shall make and sign and file in the office of the board a certificate stating the action of the board upon the application of each candidate, whereupon the secretary of the board shall notify each candidate of the result of his examination.

"Section 10. Certificates of registration.—Upon receipt of an additional fee of five dollars (\$5.00) the board shall issue to any applicant who has been certified as having passed the examination conducted by the board a certificate of registration signed by the president and the secretary of the board under the seal of the board, whereupon such applicant shall be authorized to practice professional engineering as defined by this Act.

"The board shall from time to time examine the requirements for the registration of professional engineers in other states, territories and countries and shall record those in which, in the judgment of the board, standards not lower than those provided by this Act are maintained. The secretary of the board, upon the presentation to him by any person of satisfactory evidence that such person holds a certificate of registration issued to such person by proper authority in any such state, territory or country so recorded and upon receipt by him of a fee of fifteen dollars (\$15.00), shall issue to such person a certificate of registration under this Act signed by the secretary under the seal of the board, whereupon the person to whom such certificate is issued shall be entitled to all the rights and privileges conferred by a certificate issued after examination by the board.

"Section 11. Registration without examination.—The board shall at any time on or before January first, nineteen hundred and twenty, issue a certificate of registration signed by the president and the secretary of the board under the seal of the board, upon due application therefor and the payment of a fee of fifteen dollars (\$15.00), to any candidate who shall submit evidence, verified by oath and satisfactory to the board, that he is of good character and has practiced professional engineering for at least six years preceding the date of his application and during that period has had charge of engineering work as principal or assistant for at least two years. After January first, nineteen hundred and twenty the board shall issue certificates of registration only as hereinbefore provided.

"Section 12. Registry; revocation and reissue of certificates of registration.—All certificates of registration issued by the board or its secretary shall be in such form as the by-laws of the board may prescribe. Before any certificate of registration is issued by the board or its secretary, it shall be numbered and recorded in a book kept for that purpose in the office of the board and the number of the certificate shall be noted on the certificate. Such record shall be open to public inspection and in all actions or proceedings in any court such record or a transcript of any part thereof certified by the secretary of the board under the seal of the board to be a true copy shall be entitled to admission in evidence.

"The board shall have power at any time to inquire into the identity of any person claiming to be a registered professional engineer and after due service of a notice in writing, require him to prove to the satisfaction of the board, that he is the person authorized to practice professional engineering under the certificate of registration by virtue of which he claims the privilege of this Act. When the board finds that a person claiming to be a professional engineer registered under this Act is not in fact the person to whom the certificate of registration was issued, it shall reduce its findings to writing and file them in its

office. Such findings shall be *prima facie* evidence that the person mentioned therein is falsely impersonating a professional engineer of a like or different name.

"The board may revoke a certificate of registration of a professional engineer for fraud or deceit in his practice or in the securing of his certificate or for the conviction of crime. Proceedings for the revocation of a certificate of registration shall be begun by filing with the board a written charge or charges against the accused. These charges may be preferred by any person or corporation or the board may on its own motion direct its secretary to prefer such charges. When charges are preferred against a professional engineer registered under the provisions of this Act, the board shall designate not less than three of its number as a committee to hear and determine said charges. A time and place for the hearing shall be fixed by said committee and a copy of the charges together with a notice of the time and place for the hearing shall be served upon the accused or his counsel at least ten days before the date fixed for said hearing. Where personal service or service upon counsel cannot be effected and such fact is certified on oath by any person duly authorized to make legal service, the board shall cause to be published for at least seven times, the first publication to be at least thirty days prior to the hearing, in two newspapers published in the section of the state in which the accused was last known to practice a notice to the effect that at a definite time and place a hearing will be had on the charges against the accused upon an application to revoke his certificate. At said hearing the accused shall have the right to cross-examine witnesses against him and to produce witnesses in his defense and to appear personally or by counsel. The said committee shall make a written report of its findings and recommendations and shall forthwith submit the same to the board. If the board shall find that said professional engineer has been guilty of any fraud or deceit in his practice or has been guilty of any fraud or deceit by which he was admitted to practice or has been convicted of crime, it shall revoke his certificate of registration. A two-thirds vote of all the members of the board shall be necessary for this action. The action of the board shall be recorded in the same manner as certificates of registration are recorded and the name of the person whose certificate of registration is so revoked shall be stricken from the list of registered professional engineers and he shall be disqualified from practicing as professional engineer.

"The board may reissue a certificate of registration to any person whose certificate has been revoked, but only after the expiration of one year from the date of such revocation, for reasons which the board shall by a two-thirds vote of all its members determine to be satisfactory.

"Section 13. Action of the board.—The members of the board or of any committee thereof and the secretary of the board in granting, withholding, revoking or reissuing a certificate of registration shall be deemed to be acting as officers of the state and it shall be the duty of the attorney general to represent and appear for them or any of them in any action or proceeding brought against them or any of them because of any such act.

"Section 14. Certificate presumptive evidence.—Every unrevoked certificate and endorsement of registry made as provided in this Act

shall be presumptive evidence in all courts and places that the person named therein is legally registered.

"Section 15. Penalties.—Any person who not being legally authorized to practice professional engineering within this state according to the provisions of this Act and so registered according to law shall practice, or attempt or advertise to practice, or hold himself out as authorized to practice professional engineering or shall use in connection with his name or otherwise assume, use or advertise any title or designation tending to convey the impression that he is a professional engineer and any person who shall buy, sell or fraudulently obtain any certificate of registration or who shall aid or abet such buying, selling or fraudulently obtaining or who shall practice, or attempt or advertise to practice or hold himself out as authorized to practice professional engineering under cover of any certificate obtained or issued fraudulently or unlawfully or under fraudulent representations or mistake of fact in a material regard and any person who shall practice, or attempt or advertise to practice, or hold himself out as authorized to practice professional engineering under a false or assumed name or who shall falsely impersonate any professional engineer or former professional engineer of a like or different name shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine of not less than \$25.00 or more than \$500.00, or imprisonment in the County Jail not to exceed six months.

"Section 16. Application of Act.—This Act shall not apply to any professional engineer working for the United States government; nor to any architect practicing architecture; nor to any professional engineer employed as an assistant to a professional engineer registered under this Act; nor to any professional engineer coming from without this state and possessing the qualifications for the practice of professional engineering as provided for in this Act in any branch of engineering; he shall be permitted to practice not to exceed three months before making application for examination under the terms of this Act; provided that the service of professional engineers in the U. S. military service shall be considered as the practice of professional engineering, and provided further that such army engineers may be registered without examinations, as provided in Section seven hereof, within a period of one year from the date of their discharge.

"Section 17. Time of taking effect.—This Act shall take effect on the first day of July, nineteen hundred and nineteen (1919)."

Exhibit of Army Personnel Work

Employers and others interested in personnel work will have an opportunity to examine the methods developed by the Committee on Classification of Personnel in the Army at an exhibit to be shown on the Auditorium (third) floor of the Engineering Societies Building, 29 West 39th Street, New York City, April 1st to 12th, 1919. The exhibit consists of a collection of wall charts, forms, photographs, and models showing how the Army finds out what men can do best and how it uses that information; how soldiers are trade-tested, and how officers

are rated and fitted into place; how the work is checked and supervised, and its results in the war.

The collection is being shown under the auspices of the National Association of Corporation Schools. It was on exhibition for several weeks at Washington, where it excited so much interest that, in response to many requests, the Adjutant General consented to its display in other cities. Two commissioned officers accompany the exhibit to explain its various features.

Advisory Engineering Committee for New York State

The following engineers, representing the several branches of the profession, have been selected by Engineering Council to advise and confer with the Reconstruction Commission of the State of New York: George W. Fuller, chairman, Dr. George F. Kunz, H. deB. Parsons, L. E. Stillwell, and Paul G. Brown.

This body will be known as the Advisory Engineering Committee, and is at present interested in the following Public Works: the Vehicular Tunnel, Water Power Developments, Port and Harbor, Garbage, Sewerage, and Highway Construction.

The Reconstruction Commission was recently appointed by Governor Smith, with Abram I. Elkus as Chairman. The office of the Advisory Engineering Committee is located with the Reconstruction Commission at the Hall of Records, New York City.

The Tunnel Under the Pyrenees Completed

It is reported that the Franco-Spanish Tunnel under the Pyrenees Mountains, between Puigcerda, Eastern Spain, and Ax, France, has been completed. The distance between Puigcerda, and Ax is about 20 miles. The tunnel is the result of more than ten years of negotiation between the Spanish and French Governments, the final arrangements being completed in 1915. It will shorten the distance between Paris and Madrid by about 200 miles.

The railway communications between the two countries are scanty, there being only two roads, and they are at the ends of the Franco-Spanish border. Most of the commerce is carried on by sea.

Change in Name of the American Institute of Mining Engineers

By a letter-ballot of the members of the American Institute of Mining Engineers, as reported by the tellers and announced by the President at the annual business meeting of the Institute on February 18th, 1919, the name of the Institute has been changed to the American Institute of Mining and Metallurgical Engineers.

Appointment of New York State Highway Commissioner

Col. Frederick Stuart Greene, M. Am. Soc. C. E., of Sands Point, Long Island, who has just returned from service in France with the Seventy-seventh Division, has been named by Governor Smith as State Highway Commissioner for New York. The term of office is eight years and the salary \$8 000 per year. The New York State Highway Department, it is expected, will spend about \$23 000 000 during 1919.

ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, New Year's Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

April 2d and 16th, 1919.—8.30 P. M.—Meetings will be held as usual on these evenings, that of April 2d being the regular business meeting of the Society. The arrangements for the second meeting are in the hands of the New York Meetings Committee, and programmes for both meetings will be announced later.

May 7th, 1919.—8.30 P. M.—A regular business meeting will be held, and a paper by A. F. Parker, M. Am. Soc. C. E., entitled "The East Canyon Creek Dam", will be presented for discussion.

This paper is printed in this number of *Proceedings*.

ANNUAL CONVENTION

The Forty-ninth Annual Convention of the Society will be held in the "Twin Cities" of St. Paul and Minneapolis, Minn., from June 17th to 20th, 1919, inclusive.

The arrangements are in the hands of a Committee of the Board of Direction, consisting of Messrs. W. L. Darling, Chairman, E. E. Wall, and Chas. Warren Hunt. A local Committee of sixteen members, of which Mr. R. D. Thomas is Chairman, has also been appointed, as well as a Local Committee of members from Duluth, Minn.

A circular giving information as to the general programme, transportation, hotel rates, etc., will be issued later.

ASSISTANT SECRETARY

On February 5th, 1919, Thomas J. McMinn, M. Am. Soc. C. E., retired from the office of Assistant Secretary of the Society, and by vote of the Board of Direction Capt. Stephen L. Coles (late Ordnance Dept., U. S. A.) was appointed to that office.

Mr. McMinn became Assistant Secretary of the Society in September, 1897, and has devoted himself to the work of the Society for more than twenty-one years. Arrangements have been made by the Board by which Mr. McMinn's valuable experience in Society work will be available for the time necessary to enable Capt. Coles to become familiar with his new duties, after which he will be retired on half-pay.

ENGINEERING SOCIETIES EMPLOYMENT BUREAU

Engineering Societies Employment Bureau, established December 1st, 1918, as an activity of Engineering Council, is managed by a board made up of the Secretaries of the four Founder Societies, funds for its

maintenance being provided by these Societies. The Bureau already is co-operating with engineering organizations in all parts of the country and with the Professional Section of the United States Employment Bureau. It is desirous of increasing such co-operation by working with local engineering associations and clubs. The work of the Bureau since its inception has been largely in the line of securing employment for men retiring from government war service. Members of the American Society of Civil Engineers who desire to register with this Bureau should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Employment Bureau, 16th Floor, Engineering Societies Building, 29 West 39th Street, New York City.

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction to the members who have made use of the resources of the Society in this manner has been expressed frequently, and leaves little doubt that, if it were generally known to engineers that such assistance could be had, many would avail themselves of it.

On October 1st, 1916, the Library of the American Society of Civil Engineers ceased to exist as such, and was merged in the Engineering Societies Library, adding 67 000 volumes to the collection, which comprises also the former libraries of the American Institute of Mining Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, and now has a total of 140 000 volumes and pamphlets. Containing, as the Library now does, the special collections mentioned, its scope is broadened, and, as it receives an unusually large number of technical periodicals, it is well equipped to continue the service formerly rendered by the Society Library.

The Engineering Societies Library offers this service at a cost which is trifling compared with the value of the time of an engineer who personally looks up such matters, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired, or whether a complete bibliography, involving search through periodical literature, is desired.

It sometimes happens that references are found which are not readily accessible to the person for whom the search is made. In that case the Library is prepared to furnish photographic copies of the

material at a small price per page. This method is particularly useful when there are drawings or figures in the text, which would be very expensive to reproduce by hand.

The Library is also able to provide translations of articles in foreign languages when desired.

Requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York City, who will gladly give information concerning the charges for the various kinds of service.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 35 of the Year Book for 1919.

LOCAL ASSOCIATIONS OF MEMBERS

OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Association, Organized 1905.

E. J. Schneider, President; Nathan A. Bowers, Secretary-Treasurer, 502 Rialto Building, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 p. m., at the Engineers' Club, 57 Post Street, on the third Tuesday of February,

April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at noon, every Wednesday, at the Engineers' Club, where special tables are reserved for members and guests of the Association.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

(Abstract of Minutes of Meeting)

January 6th, 1919. (Special Meeting.)—The meeting was called to order at 7.50 P. M., at the Engineers' Club; President Schneider in the chair; H. D. Dewell, Secretary, *pro tem.*; and present, also, 27 members.

The President stated the purpose of the meeting to be the consideration of the proposed law for licensing engineers.

Mr. Snyder, Chairman of the Joint Committee which had drafted the law, reported that the Committee, consisting of Messrs. Grunsky, Dockweiler, and himself, had conferred with committees representing local sections of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, and the American Institute of Mining Engineers, and it was decided to begin with the act originally drafted by the Parent Societies in 1915, which it was found possible to revise to suit the needs of California. After much discussion and careful study of all sections, the bill was finally put into a shape agreeable to all members of the Committee. He stated, further, that the Committee had concluded that about 100 engineers would take out licenses for each year after the first year's operation of the law. This, under the fees provided for, would give an annual income of \$2 500, which would probably be insufficient for the operation of the act, at least for the first few years. He estimated that in the first year about 800 engineers would be granted licenses, and this would produce an income of about \$20 000, which could be drawn upon during the next few years succeeding. He estimated that the expenses of operation of the act would be about \$3 000 per year.

There followed a detailed discussion of the bill, section by section. In response to an inquiry as to the status of an engineer from an outside State, as in the case of expert examinations and reports, Mr. Snyder explained that the proposed act would allow an outside engineer to operate in the State until his application for license was acted on, the procedure merely being that he apply for license and pay the required application fee of \$5.

General discussion brought out the fact, contrary to the ideas of one or two, that the operations of architects were not to be hindered in any way. This was put clearly on record, in order to deny the suggestion that the main purpose of the proposed act was to prohibit the architect from doing engineering work, that is, to compel an architect to employ an engineer to design the structural features of his buildings.

Mr. Snyder stated that a letter-ballot had been sent to all members, giving them the opportunity to vote on the question of presenting the proposed license law to the Legislature, and, although a comparatively small number of replies had been received, the majority was strongly

in favor of presenting it. During the discussion a telephone message was received from Mr. Bowers, in Los Angeles, reporting that the Los Angeles Chapter of the American Institute of Architects had stated that they would not present a bill on licensing to the Legislature this year. The sense of the meeting was that that statement should not affect the attitude of the Association in the matter.

The Board of Directors was authorized to expend such of the Association funds as might be necessary to cover the expenses of the Committee in presenting the bill to the Legislature in Sacramento.

Adjourned.

Colorado Association, Organized 1908.

L. R. Hinman, President; A. N. Miller, Secretary-Treasurer, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesday at 12.30 p. m., at Daniels and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

(Abstract of Minutes of Meetings)

January 21st, 1919.—The meeting was called to order at the Denver Athletic Club; President L. R. Hinman in the chair; A. N. Miller, Secretary; and present, also, 9 members and 8 guests.

The minutes of the meeting of December 21st, 1918, were read and approved.

The resignation of Mr. J. Y. Jewett was read and accepted with regret.

Mr. Oliver T. Reedy, Construction Engineer of the U. S. Reclamation Service, addressed the meeting on "The Design and Construction of the Grand River (Roller Crest) Dam", illustrating his remarks with lantern views.

Adjourned.

February 8th, 1919.—The meeting was called to order at the Denver Athletic Club; President L. R. Hinman in the chair; A. N. Miller, Secretary; and present, also, 10 members and 3 guests.

The minutes of the meeting of January 21st, 1919, were read and approved.

A communication from the Duluth Association relative to the exchange with that Association of resolutions sent to the Parent Society by Local Associations was read. On motion, duly seconded, it was decided to comply with the request.

Professor Milo S. Ketchum outlined his work in connection with the Government Explosives Plant at Nitro, W. Va. His remarks were preliminary to a more complete survey which he promised to present later.

President Hinman reported correspondence with Lt.-Col. H. S. Crocker, and announced that a joint meeting of Engineering Organizations would be held at some future date, at which Col. Crocker would describe his work in constructing the U. S. Army Supply Base at Brooklyn, N. Y.

Mr. Walter L. Drager read a paper on the "Federal Ownership of Railroads." The subject was discussed by Messrs. Comstock, Ridgway, Ketchum, and Prince.

Adjourned.

Atlanta Association, Organized 1912.

T. P. Branch, President; J. T. Wardlaw, Secretary-Treasurer, 1530 Healey Bldg., Atlanta, Ga.

Informal luncheons are held for members of the Association on the last Monday of each month, at 12.30 P. M. The place is not fixed, but this information will be furnished on application to the Secretary.

Baltimore Association, Organized 1914.

H. G. Perring, President; Charles J. Tilden, Secretary-Treasurer, The Johns Hopkins University, Baltimore, Md.

Cleveland Association, Organized 1914.

F. D. Richards, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

(Abstract of Minutes of Meeting)

February 19th, 1919.—The meeting was called to order at 12.15 P. M. in the rooms of the Cleveland Engineering Society; President F. D. Richards in the chair; George H. Tinker, Secretary; and present, also, 25 members and guests.

The minutes of the meeting of January 4th, 1919, were read and approved.

The President announced that he had appointed Messrs. J. W. Ellms, H. S. Jacoby, and K. H. Osborn, as a committee to confer on closer relations with the Cleveland Engineering Society.

The Secretary presented communications from the Secretary of the Society, and also a resolution by the St. Louis Association.

On motion, duly seconded, it was ordered that the Director from District No. 6 be requested to ascertain and report what the National Societies are doing in regard to the support of the National Service Committee.

On motion, duly seconded, it was ordered that the Director from District No. 6 be requested to endeavor to secure the passage of a resolution by the Board of Direction fixing a date when the term of office of the Chairman and Executive Committee of the Committee on Development shall expire, and directing that Committee to choose their successors.

Mr. W. P. Brown reported on the meeting of the Ohio Association of Technical Societies and the proposed bill for licensing engineers. The matter was discussed by Messrs. Leffler, Tinker, Gascoigne, Thomson, Moomaw, Evans, Poe, and Blaser.

On motion, duly seconded, the President was authorized to appoint a Legislative Committee to examine and criticise the revised draft of the bill for licensing engineers, and advise the Legislative Committee of the Ohio Association of Technical Societies of its findings. The President appointed Messrs. B. R. Leffler, W. P. Brown, and F. A. Pease on this Committee.

Adjourned.

Detroit Association, Organized 1916.

T. A. Leisen, President; Clarence W. Hubbell, Secretary, 2348 Penobscot Building, Detroit, Mich.

The regular meetings of the Association are held on the second Friday of December, April, and October, the last being the Annual Meeting.

District of Columbia Association, Organized 1916.

A. P. Davis, President; John C. Hoyt, Secretary-Treasurer, U. S. Geological Survey, Washington, D. C.

Duluth Association, Organized 1917.

W. B. Patton, President; Walter G. Zimmermann, Secretary, Wolvin Building, Duluth, Minn.

The regular meetings of the Association are held at noon on the third Monday of each month (usually at the Kitchi Gammi Club), with luncheon, followed by a short business session and the reading of papers. Visiting members of the American Society of Civil Engineers can secure from the Secretary definite information relative to the meetings, at which they will be welcomed. The Annual Meeting is held on the third Monday in May.

(Abstract of Minutes of Meeting)

February 17th, 1919.—The meeting was called to order at the Kitchi Gammi Club; President Patton in the chair; Walter G. Zimmermann, Secretary; and present, also, 22 members and 3 guests.

The minutes of the meeting of January 27th, 1919, were read and approved.

Letters from several Local Associations were read; they indicated that the suggestion of this Association in regard to exchange of resolutions between Local Associations, was meeting with approval.

A letter from the St. Louis Association containing a resolution regarding the matter of working funds for Engineering Council was referred to a committee consisting of Messrs. Hoyt, Lewis, and Coe.

Two letters from W. N. Jones, Secretary of the Northwestern Association, in reference to the Annual Convention, were referred to the Committee on Arrangements.

A letter from the Secretary of the Society, in answer to the resolution adopted by the Association, pertaining to the Joint Engineering Congress in Paris, was read, but no action was taken.

Mr. Lewis was appointed to arrange for temporary space in the Public Library for an engineering library.

Lieut. George Bryan, Jr., gave an interesting talk on his experiences in Army Engineering Camp life at Camp A. A. Humphreys, Va.

A paper entitled "Hydrated Lime and Its Use in Concrete" was read by Mr. W. E. Hawley, and Messrs. Taylor, Clapper, and Coe were appointed as a committee to lead the discussion at the next meeting.

The President announced that Col. Pope had offered to give a talk at the next meeting.

Adjourned.

Illinois Association, Organized 1916.

H. J. Burt, President; Edgar S. Nethercut, Secretary-Treasurer, 1735 Monadnock Blk., Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

(Abstract of Minutes of Meeting)

January 20th, 1919.—The meeting was called to order at 1.15 P. M. in the rooms of the Western Society of Engineers; President Baldwin in the chair; E. S. Nethercut, Secretary; and present, also, 20 members.

The President announced that this was the adjourned Annual Meeting, and the order of business would be the receipt of reports and the election of officers for the ensuing year.

The Treasurer's report was presented, and on motion, duly seconded, was approved and placed on file.

The Secretary reported a paid-up membership of 94 members, 29 of whom were admitted during 1918.

The following officers for 1919 were elected: President, H. J. Burt; Vice-President, C. B. Burdick; Secretary-Treasurer, Edgar S. Nethercut.

Onward Bates, Past-President, Am. Soc. C. E., Chairman of the Committee on Development, reported on the appointment of the Committee and its first or organization meeting, held in Chicago last November, at which the Executive Committee and a number of Sub-committees had been appointed, and stated that the work is now being carried on by these Sub-committees. He requested that members of the Society advise the Committee of any suggestions that they may have with regard to matters which might be taken up.

Mr. W. H. Woodbury, of the Duluth Association, outlined the activities of the Duluth members with reference to the Committee on Development.

Messrs. C. L. Strobel and C. F. Loweth reported on the proceedings of the Society at the Annual Meeting, and this was followed by a general discussion of the affairs of the Illinois Association and plans for the future.

Mr. E. S. Nethercut, the Association's member on the Committee on Development, mentioned several important questions which should be considered, among them the following:

The relations between the Local Association and similar associations of the other National Societies.

Membership in the Local Association as well as in the National Society.

Should arrangements be made to present papers before the Local Association as well as before the National Society?

Is it possible to have one National Engineering Society, or is it desirable?

On motion, duly seconded, the Secretary was instructed to draw up a set of questions to be sent to the members of the Association, with a request that they discuss them, in writing, for the benefit of the Committee on Development.

The Secretary called attention to the action of the Executive Committee of the War Committee of Technical Societies of Chicago, in suggesting a change in the name and activities of that Committee on account of the cessation of war, the new name to be the General Committee of Technical Societies of Chicago, and the purpose, to advance the interests of the engineer and to promote the welfare of the public and the technical professions. On motion, duly seconded, the change in name and purpose was approved.

The President appointed Mr. A. Yappen a committee of one to advise Maj. H. J. Burt of his election as President.

Adjourned.

Louisiana Association, Organized 1914.

Arsène Perrilliat, President; Eugene F. Delery, Secretary, 2007 Laharpe Street, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

Nebraska Association, Organized 1917.

Adna Dobson, President; Homer V. Knouse, Secretary-Treasurer, 109 City Hall, Omaha, Nebr.

Regular meetings of the Association are held on the first Saturday of each month, except July and August, and at such places as may be appointed from time to time by the Executive Committee. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January.

Visiting members of the Society are especially urged to communicate with the Secretary when in the city.

Northwestern Association, Organized 1914.

Ralph D. Thomas, President; W. N. Jones, Secretary, City Engineer's Office, City Hall, Minneapolis, Minn.

The meetings of the Association are held bi-monthly, alternating between St. Paul and Minneapolis, on the third Friday of each month. Information as to the time and place of such meetings will be furnished on application to the Secretary.

Philadelphia Association, Organized 1913.

F. Herbert Snow, President; Henry T. Shelley, Secretary, 416 City Hall, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers' Club of Philadelphia, 1317 Spruce Street, on the first Monday in January, April, and October, the last being the Annual Meeting.

(Abstract of Minutes of Meeting)

January 6th, 1919.—The meeting was called to order at 8.30 P. M. at the Engineers' Club; President Snow in the chair; H. T. Shelley, Secretary; and present, also, about 100 members and guests.

Past-President Samuel T. Wagner introduced Mr. F. Herbert Snow, the newly elected President, and Mr. Snow made an appropriate address.

Mr. Calvin W. Rice, Secretary of the American Society of Mechanical Engineers, and Mr. S. M. Swaab, Treasurer of the Philadelphia Association, addressed the meeting on "The Relation of the Engineer to the Community and the Value of the Society to the Engineer." The subject was discussed by Messrs. John Meigs, Charles F. Puff, Jr., John W. Ledoux, M. Ward Easby, Benjamin Franklin, Richard L. Humphrey, Samuel T. Wagner, George S. Webster, C. B. Voynow, and Charles Hansel.

Mr. Humphrey recommended that a meeting of the Association be held in the latter part of January, or early in February, for the purpose of discussing the work of the Committee on Development.

On motion, duly seconded, the President was authorized to appoint a committee to consider the addresses and discussions of the evening, the Annual Address of the President of the Society, and the Preliminary Report of the Committee on Development, with a view to the creation of various committees to be appointed by the President of the Association to consider specific subjects mentioned in these addresses, discussions, and report, and to recommend to the Board of Directors such committees and the scope of the work of each, as such committee may deem advisable.

The minutes of the meeting of October 7th, 1918, were read and approved. The report of the Auditing Committee was read and approved. A communication from the Duluth Association was read and accepted.

Adjourned.

February 3d, 1919. (Special Meeting.)—The meeting was called to order at 8.30 P. M. at the Engineers' Club; President Snow in the chair; H. F. Shelley, Secretary; and present, also, about 50 members.

The Secretary presented a resolution from the St. Louis Association favoring a voluntary contribution of one dollar per member per year for a period of three years by all the members of the Society for the use of the National Service Committee and for such additional purposes as may be approved by Engineering Council.

The resolution was accepted by the Association and referred to the Board of Directors for consideration.

The President announced the membership of the committees created by the Board of Directors and the Association.

On motion, duly seconded, it was decided that the Association's Committee on Development be asked to report at a meeting to be called on March 3d, 1919.

On motion, duly seconded, it was decided to appoint four members, in addition to the Chairman, already selected, to the following Committees:

Technical Activities (Mr. C. B. Voynow, Chairman).

Internal Relations and Local Association (Mr. John A. Vogleson, Chairman).

External Relations with the Engineering Profession (Mr. Emile G. Perrot, Chairman).

Public Affairs (Mr. M. Ward Easby, Chairman).

Mr. Benjamin Franklin was appointed Chairman of the Committee on Development of the Association.

Mr. R. L. Humphrey, member of the Committee on Development, addressed the meeting on the work of that Committee, setting forth the problems confronting it, giving prominence to the salient features, and outlining a procedure which would create a definite policy and eventually terminate in a recommendation which will make it possible for the Society to satisfy the demands of its membership that its endeavor be extended to new, larger, and more progressive fields.

Messrs. Fisher, Wagner, Swaab, and Perrot took part in the discussion.

Adjourned.

Pittsburgh Association, Organized 1917.

Robert A. Cummings, President; Nathan Schein, Secretary-Treasurer, 1510 Carson Street, Pittsburgh, Pa.

The Annual Meeting of the Association is held on the first Monday in October. The time and place of other meetings are not fixed, but this information will be furnished on application to the Secretary.

Portland, Ore., Association, Organized 1913.

E. Burslem Thomson, President; C. P. Keyser, Secretary, 318 City Hall, Portland, Ore.

St. Louis Association, Organized 1888 (Constitution Approved by Board, 1914).

J. A. Ockerson, President; C. W. S. Sammelman, Secretary-Treasurer, 300 City Hall, St. Louis, Mo.

The Annual Meeting of the Association, for the election of officers and for the transaction of business, is held on the fourth Monday in November. Two meetings each year, for the presentation and discussion of technical papers, are held in the Auditorium of the Engineers Club of St. Louis and are open to members of the Associated Societies. Other "get-together" meetings are held regularly for dinner or luncheon on the fourth Monday of each month except July, August, and November.

(Abstract of Minutes of Meeting)

January 27th, 1919.—The meeting was called to order at 12.45 P.M.; President J. A. Ockerson in the chair; C. W. S. Sammelman, Secretary; and present, also, 24 members.

The minutes of the previous meeting were read and approved.

The resignation of Mr. T. C. Moorshead as a member of the Association was received and accepted.

On motion, duly seconded, the Association concurred in the resolutions of the Duluth Association relative to the geographical location of members of Committees.

On motion, duly seconded, a letter from the Duluth Association relating to the formation of an Engineering Society composed of all branches of engineering, was referred to Messrs. B. L. Brown and E. E. Wall for report.

On motion, duly seconded, the following resolution was adopted:

"Whereas, we are informed that the work of Engineering Council is being seriously hampered on account of inability of the four founder societies to supply the Council with sufficient funds; and,

"Whereas, we are informed that Engineering Council is without any funds whatever for the maintenance in Washington of the newly established National Service Committee, the proposed work of which is considered of the very greatest importance to the Engineering Profession; therefore,

"Be it Resolved, That the St. Louis Association of Members declares itself in favor of a voluntary contribution of one dollar per member per year for a period of three years by all of the members of the American Society of Civil Engineers for the use of the National Service Committee, and for such additional purposes as may be approved by Engineering Council; and

"Be it Further Resolved, That a copy of this Resolution be sent to each local association of the American Society of Civil Engineers suggesting similar action on their part, and that the Board of Direction of this Society bring before the other national societies through Engineering Council a request for similar action on the part of their membership."

Mr. E. E. Wall reported briefly relative to the Annual Meeting of the Society.

Adjourned.

San Diego Association, Organized 1915.

W. C. Earle, President; Ralph Wueste, Secretary-Treasurer, Bonita, Cal.

Seattle Association, Organized 1913.

L. M. Grant, President; Phil A. Franklin, Secretary, 1409 East 65th St., Seattle, Wash.

The regular meetings of the Association, with luncheon, are held at the Engineers' Club, Arctic Building, Third Avenue and Cherry Street, at 12.15 P. M., on the last Monday of each month.

Special evening meetings are held from time to time for the purpose of discussing important topics, and information concerning these meetings may be had by addressing the Secretary. All members in any grade of the American Society of Civil Engineers are cordially invited to attend the meetings when in the vicinity, and, if located in this District for any length of time, their membership in the Association will be appreciated.

Southern California Association, Organized 1914.

George G. Anderson, President; Floyd G. Dessery, Secretary, 514 Central Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular monthly meetings on the second Wednesday of each month, the December meeting being the Annual Meeting.

Informal luncheons in connection with the Joint Technical Societies of Los Angeles are held at 12.15 P. M. every Thursday at the Broadway Department Store Café.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

(Abstract of Minutes of Meeting)

February 12th, 1919.—The meeting was called to order at Christopher's at 7.30 P. M.; President George G. Anderson in the chair; F. G. Dessery, Secretary; and present, also, 28 members and 6 guests.

The Secretary announced the personnel of the several committees appointed, as follows:

On Programme: W. K. Barnard, Chairman, A. L. Sonderegger, and E. L. Adams.

On Reconstruction and Development: F. E. Trask, Chairman, W. H. Code, F. H. Olmsted, A. C. Hansen, H. Z. Osborne, Jr., and F. G. Dessery.

On Entertainment: H. Hawgood, Chairman, T. D. Allin, and H. E. Warrington.

On Joint Technical Societies: C. T. Leeds, Chairman, W. K. Barnard, George G. Anderson, and F. G. Dessery.

On Licensing Engineers: E. T. Flaherty, Chairman, E. R. Bowen, B. Moody, S. B. Morris, and Franklin Thomas.

The Secretary read a communication from the Secretary of the Society, stating the attitude of the Board of Direction in relation to the Committee on Development, as involved in the matters mentioned in the resolution of the Duluth Association, which resolution was also presented to the meeting. The President, as the representative of the Southern California Association, reported in detail the considerations which had led to the abandonment of the meeting of the Committee in New York at the time of the Annual Meeting, as shown by the various communications received by the members of the Committee, and then commented on the status of the work since the Chicago meeting. General discussion by the members followed, in the course of which great interest in the importance of the Committee's work was manifested and disappointment expressed in the progress made.

On motion, duly seconded, it was decided to appoint a committee of three to report to the Board of Directors on the general instructions contained in a motion (duly seconded) expressing this Association's conclusion that the work before the Committee on Development is of paramount importance, that the time is opportune for consideration and determination of the problems involved, that unnecessary delay has occurred and was likely to continue, that every facility should be

granted the Committee and every influence used to urge the officials to expedite the work, and that copies of the resolution be sent to the President and Board of Direction of the Society, the Chairman, and all members of the Committee on Development, and to all Local Associations.

Subsequently, President Anderson appointed Messrs. Barnard, Chairman, Bowen, and Olmsted as such committee, and it submitted the following resolution:

"Whereas: The problems submitted by the Society to the Committee on Development are of the most vital and far reaching consequence to the Society and, in view of their importance and the opportune nature of these present times, and the imperative necessity for their immediate consideration and determination, the progress of the work of the Committee should be as speedy as is consistent with thorough deliberation; and

"Whereas: It is the sense of this Association that much unnecessary delay has already been caused, and that, from present indications, the continuation of such delay seems probable, to the disappointment of the large body of the members who have confidently hoped for early and beneficial results from the labors of the Committee; therefore, be it

"Resolved: That the Southern California Association of Members of the American Society of Civil Engineers considers the work to be performed by the Committee on Development to be paramount to any enterprise or undertaking in which the American Society of Civil Engineers is now engaged; and, be it further

"Resolved: That every facility and encouragement should be given the Committee on Development in its work, and that the officers of the Society and of the Committee urge the expedition of the deliberation; and, be it further

"Resolved: That a copy of these resolutions be sent to the President and Board of Direction of the American Society of Civil Engineers, and to the Chairman and all Members of the Committee on Development, and to all Local Associations of Members of the American Society of Civil Engineers."

Mr. Flaherty, Chairman of the Committee on Licensing Engineers, presented a report on the "Draft of a Proposed Act for the Registration of Professional Engineers in California," adopted by the San Francisco Association and approved by Committees of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Institute of Mining Engineers, and the Pacific Coast Association of Consulting Engineers.

The report of the Committee stated its conclusions as to the several sections, and recommended the adoption of the Act if rewritten, corrected, and amended.

Following a long discussion, it was moved, seconded, and carried, that the report of the Committee be placed on file, and that the Committee continue its labors and considerations, with the thanks of the Association for the services rendered.

On motion, duly seconded, the sense of the meeting was expressed in favor of the principle of legislation to license or register professional

engineers in California, and of inviting a conference with the San Francisco Committee, the Joint Committee of the Technical Societies of Los Angeles, and the Committee on Licensing Engineers of this Association, with the view of reconsidering the proposed Act and of drafting such a measure as will meet with the approval of the members of the various engineering organizations.

The Chairman of the Programme Committee outlined the plans of his Committee for a symposium on "Flood Control in Southern California."

The Secretary presented a communication from the Duluth Association requesting the exchange of copies of all resolutions addressed to the Parent Society. It was decided to comply with this request.

The President announced that, in view of the plans of the Programme Committee, the meetings of the Association hereafter will be held monthly, in place of bi-monthly.

Adjourned.

Spokane Association, Organized 1914.

Peter Morgensen, President; Charles E. Davis, Secretary, City Engineer's Office, Spokane, Wash.

The regular meetings of the Association are held on the second Friday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Visiting members are invited to attend the meetings.

Texas Association, Organized 1913.

R. J. Potts, President; J. H. Brillhart, Secretary, Care, Mosher Mfg. Co., Dallas, Tex.

Utah Association, Organized 1916.

A. B. Villadsen, President, 304 Dooly Block, Salt Lake City, Utah.

The Annual Meeting of the Association is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the President.

PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms, and at all meetings:

American Institute of Electrical Engineers, 25 West Thirty-ninth Street, New York City.

American Institute of Mining Engineers, 25 West Thirty-ninth Street, New York City.

American Society of Mechanical Engineers, 25 West Thirty-ninth Street, New York City.

Asociación de Ingenieros y Arquitectos de Mexico, Avenida Juarez, 12, City of Mexico, Mexico.

Associação dos Engenheiros Civis Portuguezes, Lisbon, Portugal.

Australasian Institute of Mining Engineers, Melbourne, Victoria, Australia.

Boston Society of Civil Engineers, 715 Tremont Temple, Boston, Mass.

Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn, N. Y.

Civil Engineers' Society of St. Paul, Public Library, St. Paul, Minn.

Cleveland Engineering Society, Chamber of Commerce Building, Cleveland, Ohio.

Cleveland Institute of Engineers, Middlesbrough, England.

Dansk Ingeniorforening, Amaliegade 38, Copenhagen, Denmark.

Detroit Engineering Society, Detroit Board of Commerce Building, Detroit, Mich.

Engineering Association of Nashville, Commercial Club Building, Nashville, Tenn.

Engineering Association of New South Wales, 5 Elizabeth Street, Sydney, New South Wales, Australia.

Engineering Institute of Canada, 176 Mansfield Street, Montreal, Que., Canada.

Engineering Societies Club of Hawaii, E. F. Cykler, Secretary, Honolulu, Hawaii.

Engineers and Architects Association of Southern California, 405 Hosfield Bldg., Los Angeles, Cal.

Engineers and Architects Club of Louisville, 1412 Starks Building, Louisville, Ky.

Engineers' Club of Baltimore, 6 West Eager Street, Baltimore, Md.

Engineers' Club of Kansas City, Robert S. Beard, Secretary, Third Floor, City Hall, Kansas City, Mo.

Engineers' Club of Minneapolis, 17 South Sixth Street, Minneapolis, Minn.

Engineers' Club of Philadelphia, 1317 Spruce Street, Philadelphia, Pa.

Engineers' Club of St. Louis, 3817 Olive Street, St. Louis, Mo.

Engineers' Club of Toronto, 96 King Street, West, Toronto, Ont., Canada.

Engineers' Club of Trenton, Trent Theatre Building, 12 North Warren Street, Trenton, N. J.

Engineers' Society of Northeastern Pennsylvania, 415 Washington Avenue, Scranton, Pa.

Engineers' Society of Pennsylvania, 31 South Front Street, Harrisburg, Pa.

Engineers' Society of Western Pennsylvania, 568 Union Arcade Building, Pittsburgh, Pa.

Florida Engineering Society, J. R. Benton, Secretary, Gainesville, Fla.

Institute of Marine Engineers, The Minories, Tower Hill, London, E., England.

Institution of Civil Engineers, Great George Street, Westminster, S. W., London, England.

Institution of Engineers of the River Plate, Calle 25 de Mayo 195, Buenos Aires, Argentine Republic.

Institution of Mechanical Engineers, 11 Great George Street, London, S. W. 1, England.

Institution of Naval Architects, 5 Adelphi Terrace, London, W. C., England.

Junior Institution of Engineers, 39 Victoria Street, Westminster, S. W., London, England.

Koninklijk Instituut van Ingenieurs, The Hague, The Netherlands.

Louisiana Engineering Society, State Museum Building, Chartres and St. Ann Streets, New Orleans, La.

Memphis Engineers' Club, Memphis, Tenn.

Midland Institute of Mining, Civil and Mechanical Engineers, Sheffield, England.

Montana Society of Engineers, Butte, Mont.

North of England Institute of Mining and Mechanical Engineers, Newcastle-upon-Tyne, England.

Oregon Society of Civil Engineers, Portland, Ore.

Pacific Northwest Society of Engineers, 803 Central Building, Seattle, Wash.

Rochester Engineering Society, Rochester, N. Y.

Sociedad Colombiana de Ingenieros, Bogota, Colombia.

Sociedad de Ingenieros del Peru, Lima, Peru.

Societe des Ingenieurs Civils de France, 19 rue Blanche, Paris, France.

Society of Engineers, 17 Victoria Street, Westminster, S. W., London, England.

Southwestern Society of Engineers, C. E. Barglebaugh, Secretary, 703 First National Bank Building, El Paso, Tex.

Svenska Teknologforeningen, Brunkebergstorg 18, Stockholm, Sweden.

Tekniske Forening, Vestre Boulevard 18-1, Copenhagen, Denmark.

Vermont Society of Engineers, George A. Reed, Secretary, Montpelier, Vt.

Western Society of Engineers, 1735 Monadnock Block, Chicago, Ill.

ACCESSIONS TO THE ENGINEERING SOCIETIES LIBRARY

(From February 1st to February 28th, 1919)

DONATIONS*

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

THE ELEMENTS OF WOODEN SHIP CONSTRUCTION.

By W. H. Curtis. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 223 pp., 199 illus., 9 x 6 in., cloth. \$2.50.

This book is a revised and enlarged edition of a course prepared for the Education and Training Section of the Emergency Fleet Corporation. It is intended for the use of carpenters and others who, though skilled in their work, lack the detailed knowledge of shipbuilding necessary for efficiency.

PRACTICAL SHIP PRODUCTION.

By A. W. Carmichael. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 252 pp., 101 illus., 9 x 6 in., cloth. \$3.00.

The purpose of this book is to serve as an introduction to the subject by presenting the most important general principles of ship design and describing the various processes of shipbuilding. The treatment is practical rather than theoretical, and matters of construction are more fully considered than problems of design.

1919 RECORD OF AMERICAN AND FOREIGN SHIPPING, NEW YORK.

Published by the American Bureau of Shipping, "American Lloyds." N. Y., 1919. 1056 pp., 10 x 10 in., morocco.

The 1919 Record presents no change in form from previous years. It provides a record of American and foreign vessels, classified according to the rules of the Bureau, and is endorsed by the Navy Department and the Boards of Marine Underwriters of New York, Boston, and San Francisco. In addition to the list of vessels, there are lists of owners, marine underwriters' representatives, surveyors, machinery constructors, dry docks, marine railways, and ship builders. An index of changed names is also included.

THE RUDDER DIRECTORY:

A Trade List of Shipbuilding and Marine Industries. Compiled and Issued by The Rudder Publishing Company. N. Y., 1919. 332 pp., 1 pl., 9 x 6 in., cloth. \$5.00.

Included in this directory are lists of the steel, wood, composite, and concrete shipyards, with the names of their officers, ship and engine repair plants, dry docks and marine railways, owners and operating companies, marine insurance companies, boat builders, engine builders, ship chandlers and manufacturers of equipment, parts, etc. A supplement, revised to February 6th, 1919, brings the data concerning the U. S. Shipping Board and the Emergency Fleet Corporation up to date.

PETROLEUM REFINING.

By Andrew Campbell, with a Foreword by Sir Boerton Redwood. Lond., Charles Griffin & Co., Ltd., 1918. 297 pp., 138 illus., 29 folding pl., 3 diag., 11 tab., 9 x 6 in., cloth. \$8.50.

This volume, the only book in English devoted solely to the subject, describes the ordinary methods used to prepare marketable products from petroleum, except "cracking" methods. The work is based on extended practical experience, is well supplied with illustrations and drawings, and includes a bibliography.

*Unless otherwise specified, books in this list have been donated by the publishers.

FIGHTING THE BOCHE UNDERGROUND.

By H. D. Trounce. N. Y., Charles Scribner's Sons, 1918. 234 pp., 7 pl., 1 por., 1 diag., 8 x 5 in., $\frac{1}{2}$ cloth. \$1.50. (Gift of Author.)

Captain Trounce, an American mining engineer, enlisted in the Royal Engineers in 1915, and transferred to the Engineer Reserve Corps of the American Army in 1917. His book is a description of the underground fighting in which he participated in Flanders, at Arras, Vimy Ridge, and elsewhere.

INDUSTRY AND HUMANITY:

A Study of the Principles Underlying Industrial Reconstruction. By W. L. Mackenzie King. Boston and N. Y., Houghton, Mifflin Company, 1918. 567 pp., 10 charts, 8 x 6 in., cloth. \$3.00.

This volume, by the former Minister of Labor of Canada, is a statement of the underlying principles which are finding expression in the organization of industrial society and which should obtain in all efforts at reconstruction. The book is based on the author's twenty years of personal contact with labor problems, supplemented by a study of the literature of the subject.

THE INSTRUCTOR, THE MAN AND THE JOB:

A Hand Book for Instructors of Industrial and Vocational Subjects. By Charles R. Allen. Phila. and Lond., J. B. Lippincott Co. (copyright 1919). 373 pp., 8 x 5 in., cloth. \$1.50.

The author, who has been Agent for Industrial Training for the Massachusetts Board of Education, and Superintendent of Instructor Training for the Emergency Fleet Corporation, gives the result of his experience in this volume, which is intended as a handbook for instructors in industrial plants and as instruction notes in training courses for instructors.

INSTINCTS IN INDUSTRY:

A Study of Working-Class Psychology. By Ordway Tead. Boston and N. Y., Houghton, Mifflin Company, 1918. 222 pp., 8 x 5 in., cloth. \$1.40.

With the idea of contributing to a better understanding of people in their capacity as manual workers, Mr. Tead has analyzed in turn the ten basic instincts on which our life and conduct rest, has shown how each affects the worker's relation to his job, and how each must be studied and used in the task of attaining sound relations between the employer and the employed.

OUR NATIONAL FORESTS:

A Short Popular Account of the Work of the United States Forest Service on the National Forests. By Richard H. Douai Boerker. N. Y., The Macmillan Company, 1919. 238 pp., 80 illus., 8 x 5 in., cloth. \$2.50.

The author presents a well-illustrated account of our National forest problem and of the work of the Forest Service, written in popular form and based largely on his personal experience and observation. Contents: The Creation and Organization of the National Forests; The Administration of the National Forests; The Protection of the National Forests; The Sale and Rental of National Forest Resources; Appendix: Table of Land Areas Within the National Forest Boundaries, June 30, 1917.

PHYSICS FOR TECHNICAL STUDENTS:

Sound, Light, Electricity, and Magnetism. By William Ballantyne Anderson. N. Y., McGraw-Hill Book Company, Inc.; Lond., Hill Publishing Co., Ltd., 1919. 794 pp., 373 illus., 9 x 6 in., cloth. \$3.00.

This book completes the author's textbook of physics, the first part of which has been published previously under the title, "Mechanics and Sound." The writer has aimed to produce a college text especially suitable for students of agriculture and engineering, in which particular attention is directed to practical applications of the subject.

THOMAS' REGISTER OF AMERICAN MANUFACTURERS

And First Hands in All Lines. N. Y., Thomas Publishing Co. (copyright 1919). 4200 pp., 12 x 10 in., cloth. \$15.00.

The tenth edition of this well-known trade directory is dated "October" as usual, although corrections were made up to December 20th. The directory is divided into various lists, the chief one being a carefully classified list of manufacturers in all lines, subclassed geographically and provided with an extensive index to the classification. Other lists are of representative banks, boards of trade, chambers of commerce, etc., trade papers, leading trade names, and an alphabetical list of manufacturers. The volume contains 4200 pages of information, conveniently arranged for quick consultation.

JOHNSON'S MATERIALS OF CONSTRUCTION.

Rewritten by M. O. Withey and James Aston. Edited by F. E. Turneaure. 5th edition. N. Y., John Wiley and Sons, Inc.; Lond., Chapman and Hall, Ltd., 1919. 840 pp., illus., 1 pl., 1 por., tab., 9 x 6 in., cloth. \$6.00.

As the progress of the past twenty years in the knowledge of the properties of materials made Professor Johnson's book an inadequate account of the subject, it has been rewritten under the editorship of his successor at the University of Wisconsin. The authors have aimed to retain the broad scope of the original work as a statement of the essential information concerning the sources, manufacture or fabrication of the principal materials, their more important mechanical and physical properties, and the influences of various factors on them, the causes of defects and variations, the methods of testing and their general uses. The arrangement of the book is new, and some changes have been made in its scope. Obsolete matter has been eliminated and modern data have been substituted. The volume is intended to serve both as a textbook and as a work of reference.

**SUMMARY OF SOCIETY MEMBERSHIP SERVING IN THE
ARMIES AND NAVIES OF THE UNITED STATES
AND ITS ALLIES**

March 12th, 1919

| AMERICAN ARMY | | AMERICAN NAVY | |
|---------------------------|------|-----------------------------------|------|
| Major-Generals. | 9 | Rear-Admirals. | 5 |
| Brig.-Generals. | 18 | Captains. | 6 |
| Colonels. | 54 | Commanders. | 14 |
| Lt.-Colonels. | 56 | Lt.-Commanders. | 14 |
| Majors. | 243 | Civil Engineers (rank not given). | 9 |
| Captains. | 515 | Lieutenants. | 29 |
| First Lieutenants. | 238 | Lieutenants (Junior Grade). | 8 |
| Second Lieutenants. | 55 | Ensigns. | 11 |
| Regimental Sergeants. | 1 | Asst. Paymaster (rank not given). | 1 |
| Master Engineers. | 8 | Chf. Machinist's Mate. | 2 |
| Master Gunners. | 2 | Chf. Carpenter's Mate. | 1 |
| Sergeants. | 17 | Total in Navy. | 100 |
| Corporals. | 9 | | |
| Privates. | 33 | | |
| Students, Training Camps. | 6 | | |
| Miscellaneous. | 3 | | |
| Total. | 1267 | | |
| BRITISH ARMY | | | |
| Brig.-Generals. | 1 | | |
| Lt.-Colonels. | 5 | | |
| Majors. | 10 | | |
| Captains. | 15 | | |
| Lieutenants. | 14 | | |
| Second Lieutenants. | 6 | | |
| Corporals. | 2 | | |
| Privates. | 1 | | |
| Miscellaneous. | 1 | | |
| Total. | 55 | | |
| FRENCH ARMY | | | |
| Commandant. | 1 | | |
| Captains. | 1 | | |
| Lieutenant. | 1 | | |
| Aspirant. | 1 | | |
| Miscellaneous. | 2 | | |
| Total. | 6 | | |
| Total in Armies. | 1328 | | |
| SUMMARY FOR ARMIES | | | |
| Major-Generals. | 9 | | |
| Brig.-Generals. | 19 | | |
| Colonels. | 54 | | |
| Lt.-Colonels. | 61 | | |
| Majors. | 253 | | |
| Commandant. | 1 | | |
| Captains. | 531 | | |
| Lieutenants. | 253 | | |
| Second Lieutenants. | 61 | | |
| Regimental Sergeants. | 1 | | |
| Master Engineers. | 8 | | |
| Master Gunners. | 2 | | |
| Sergeants. | 17 | RECAPITULATION | |
| Corporals. | 11 | Total in Armies. | 1328 |
| Privates. | 34 | Total in Navy. | 100 |
| Students, Training Camps. | 7 | Total on Roll of Honor. | 1428 |
| Miscellaneous. | 6 | Died in Service. | 26 |
| Total. | 1328 | Grand Total. | 1454 |

ROLL OF HONOR

A List of Members of the Society Who are Serving in the Army or Navy of the United States or Any of Its Allies.*

VANSITTART, GEORGE EDWARD. *Maj., 13th Battery, Canadian Field Artillery, 2d Canadian Div.; wounded in action (France); died May 14th, 1918.*

AGNEW, AUGUSTUS WATEROUS. *Capt., 3d Canadian Pioneers; wounded in action (France); died September 17th, 1918.*

HAGUE, WILLIAM. *1st Lieut., Engr. R. C., 116th Engrs.; died in service (France), January 1st, 1918.*

GOODFELLOW, JAMES GORDON. *Maj., Royal Engrs.; killed in action (France), March 23d, 1918.*

BUCKWALTER, HARRIS DANIEL. *Capt., Engr. R. C.; killed in action (France), May 12th, 1918.*

LINDBERY, CHARLES ARTHUR. *Capt., Engr. R. C.; died in service (Camp Lee, Va.), May 27th, 1918.*

ANNEAR, EDGAR HAROLD. *Capt., Engr. R. C.; died in service (Hoboken, N. J.), August 28th, 1918.*

SLEPPY, KIRBY BALDWIN. *Capt., Engineers, U. S. A., 4th Engrs.; killed in action (France), August 4th, 1918.*

ALEXANDER, EDWARD PORTER. *1st Lieut., Engineers, U. S. A., 509th Engrs.; died in service (France), September 5th, 1918.*

McCLURE, HUNTER. *1st Lieut., Engineers, U. S. A., Co. N, 21st Engrs.; died in service (France), September 26th, 1918.*

REAM, WARD HALL. *1st Lieut., Engineers, U. S. A., Co. C, 305th Engrs.; killed in action (France), October 4th, 1918.*

DEDICKE, ERNEST CHARLES. *1st Lieut., U. S. A.; wounded in action (France); died July 15th, 1918.*

DEAN, STANLEY. *Capt., Quartermaster Corps, U. S. A.; died in service (Camp Humphreys, Va.), October 2d, 1918.*

PECK, MYRON HALL. *Capt., Engineers, U. S. A., 2d Engrs.; killed in action (France), October 9th, 1918.*

HONEYMAN, BRUCE RITCHIE. *Capt., Engineers, U. S. A., Co. A, 313th Engrs.; died in service (France), October 15th, 1918.*

MILLS, ADELBERT PHILO. *Capt., Engineers, U. S. A.; died in service (France), October 20th, 1918.*

PRITCHETT, FREDERICK BORRADAILE. *Lieut., U. S. A., 109th F. A., Headquarters Co., 28th Div.; wounded in action (France); died September 6th, 1918.*

MURRAY, JAMES POWELL. *Capt., Engineers, U. S. A.; died in service (Austin, Tex.), September 28th, 1918.*

JONES, GRANDVILLE REYNARD. *Capt., Sanitary Corps, U. S. A.; died in service (Camp Benning, Ga.), December 22d, 1918.*

* This list is made up from replies to a circular forwarded to members of the Society, and others, and is probably neither accurate nor complete. It is requested that the attention of the Secretary be called to any omissions or inaccuracies in order that they may be corrected in subsequent lists.

BELL, VICTOR HUGO. M. S. E., Meteorological Detachment, Signal Corps, U. S. A.; died in service (Arcadia, Cal.), January 6th, 1919.

REILLY, CHARLES GILBERT. Capt., U. S. A., Co. D, 313th Inf.; killed in action (France), October 1st, 1918.

MARIAN, RALPH RICHARDSON. 2d Lieut., U. S. A., Co. B, 105th Engrs.; killed in action (France), October 17th, 1918.

SLIFER, HIRAM JOSEPH. Lt.-Col., U. S. A., 21st Engrs. (Light Ry.); died in service (France), February 3d, 1919.

OSTRUP, JOHN CHRISTIAN. Maj., Engineers, U. S. A.; died in service (New York City), February 27th, 1919.

HAZLEHURST, JAMES NISBET. Maj., Engineers, U. S. A.; died in service (France), February 9th, 1919.

HALCOMBE, NORMAN MARSHALL. Capt., Royal Flying Corps (British); died in service (Port Said, Egypt), February 12th, 1919.

Abbot, Frederic V. Brig.-Gen., Engineers, U. S. A.

Abbot, Frederick William. Lt.-Col., British Army.

Acher, A. H. Col., Engineers, U. S. A., A. E. F., France.

Acker, Robert L. Corporal, Headquarters Co., 7th F. A., A. E. F., France.

Ackerman, Alexander S. Capt., Engineers, U. S. A., A. E. F., France.

Adams, Arthur. Lt.-Col., Ordnance, U. S. A.

Adams, Edward M. Maj., U. S. A.

Adams, Milton Jewell. Capt., Engineers, U. S. A., Co. C, 114th Engrs.

Adams, Raymond E. Capt., Quartermaster Corps, U. S. A.

Adams, Walter Francis. Sergeant, Co. E, 2d Bn., 23d Engrs., A. E. F., France.

Adams, William H. Capt., Quartermaster Corps, U. S. A.

Albert, Frederick W. Lt.-Col., Engineers, U. S. A., 33d Engrs., A. E. F., France.

Alden, Herbert C. 1st Lieut., Coast Artillery, U. S. A.

Alden, Langford Taylor. Aspirant, 7^e Batterie, 51st Regt. d'Artillerie, Secteur Postal No. 82 (French Army); Care, Morgan, Harjes Cie., Boulevard Haussmann, Paris, France.

Alderman, Ernest S. Lieut., Quartermaster Corps, U. S. A.

Alexander, Kay. Maj., 12th Canadian Ry. Troops, B. E. F., France.

Allen, Franklin R. Capt., Engineers, U. S. A., 603d Engrs., A. E. F., France.

Allen, Herschel Heathcote. Capt., Engineers, U. S. A.

Allen, Ralph B. 1st Lieut., Engineers, U. S. A., Co. B, 25th Engrs., A. E. F., France.

Allen, Raymond C. Capt., Quartermaster Corps, U. S. A.

Allen, Walter Henry. Maj., Engineers, U. S. A.

Allen, Walter Hinds. Commander, Civil Engineer Corps, U. S. N.

Allison, William F. Maj., Engineers, U. S. A., A. E. F., France.

Altman, Frank S. Capt., Engineers, U. S. A., 23d Engrs., A. E. F., France.

Altstaetter, F. W. Col., Engineers, U. S. A.

Alvey, James P., Jr. 1st Lieut., Quartermaster Corps, U. S. A., Care, Section Engr., Base Section 4, A. P. O. 760, A. E. F., France.

Anders, Frank L. Capt., Quartermaster Corps, U. S. A.

Anderson, C. L. B. Lieut., Civil Engineer Corps, U. S. N.

Anderson, J. E. Maj., 212th Field Co., Royal Engrs., B. E. F., France.

Anderson, W. P. Capt., Engineers, U. S. A., A. E. F., France.

Anderson, W. S. Cadet, School of Military Aeronautics, U. S. A.

Andrew, Clarence R. Capt., Engineers, U. S. A., 32d Engrs., A. P. O. 705, A. E. F., France.

Andrews, J. H. M. Lt.-Col., Ordnance, U. S. A.

Angas, Robert M. 1st Lieut., U. S. A., 106th Engrs.

Applegarth, Gault. Capt., Engineers, U. S. A., 23d Engrs., A. E. F., France.

Arakawa, Futoshi. 2d Lieut., Co. K, 1st Hawaiian Inf., U. S. A., Schofield Barracks, Hawaii.

Ardery, Edward Dahl. Col., Engineers, U. S. A.

Armitage, George W. Maj., Quartermaster Corps, U. S. A.

Armstrong, Charles Johnstone. Brig.-Gen.; Chf. Engr., H. Q., Canadian Army Corps, B. E. F., France.

Armstrong, Merwin. Capt., Engineers, U. S. A., Co. D, 105th Engrs., A. E. F., France.

Armstrong, Roger W. Capt., Quartermaster Corps, U. S. A.

Arn, William G. Maj., Engineers, U. S. A., 2d Bn., 13th Engrs. (Ry.), A. E. F., France.

Arnold, Bion J. Lt.-Col., Air Service, U. S. A.

Ashkins, Nathan Thomas. 1st Lieut., Engineers, U. S. A., Lines of Communication, Eng. Headquarters, A. E. F., France.

Ashley, Carl. Capt., Engineers, U. S. A., U. S. M. P. O. 702, A. E. F., France.

Ashmead, P. H. Maj., Engineers, U. S. A.

Asplundh, E. T. Capt., Engineers, U. S. A., 103d Engrs., A. P. O. 744, A. E. F., France.

Asserson, Henry Raymond. Maj., Engineers, U. S. A., C. E. L. O. C., A. E. F., France.

Atterbury, W. W. Brig.-Gen.; Director-General of Transportation, A. E. F., France.

Atwood, William C. Lt.-Col., Engineers, U. S. A.; Am. Member, Transportation Committee for Eastern Europe for the Inter-Allied Supreme Economic Council, 10 rue Faquet, Paris, France.

Ayres, John Henry. Capt., Engineers, U. S. A., Co. D, 42d Engrs.

Ayres, Quincy C. 2d Lieut., Engineers, U. S. A. (*Unattached*), A. E. F., France.

Bailey, Lewis P. Capt., Engineers, U. S. A., Co. A, 304th Engrs.

Bakenhus, R. E. Commander, Civil Engineer Corps, U. S. N.

Baker, George L. Capt., Inf., U. S. A., 23d Co., Military Police, 6th Bn., 153d Depot Brigade, Camp Dix, N. J.

Baker, H. S. Col., Engineers, U. S. A., 111th Engrs., 36th Div., A. E. F., France.

Baker, Shirley. Capt., Engineers, U. S. A., Co. B, 23d Engrs.

Balch, William H. Maj., Engineers, U. S. A., A. P. O. 717, A. E. F., France.

Barber, Charles W. Private, 38th Engrs.

Barber, Justin F. Sergeant, Co. M, 23d Engrs., A. E. F., France.

Barber, Norman N. Capt., Engineers, U. S. A., 16th Engrs., A. E. F., France.

Barclay, A. J. 1st Lieut., Engineers, U. S. A.

Barnard, Archer F. 1st Lieut., Engineers, U. S. A.

Barney, Samuel E. Maj., Engineers, U. S. A. (*Unassigned*).

Barry, E. J. Maj., Engineers, U. S. A.

Bartholomew, B. W. 1st Lieut., Engineers, U. S. A., 301st Engrs., A. E. F., France.

Bascom, George R. Maj., Sanitary Corps, U. S. A.

Bass, Fred T. Capt., Engineers, U. S. A., Headquarters, 1st Bn., 32d Engrs., A. E. F., France.

Bassett, Herbert H. Maj., Engineers, U. S. A.

Battie, H. S. 1st Lieut., Engineers, U. S. A.

Baver, Walter S. Lieut., Sanitary Corps, U. S. A.

Baxter, O. G. Capt., Engineers, U. S. A., Co. C, 601st Engrs.

Bayliss, Paul. 2d Lieut., Engineers, U. S. A., 8th Engrs. (Mounted).

Beach, Lansing H. Col., Engineers, U. S. A.

Beale, Allan S. Lieut., U. S. Air Service (Aeronautics).

Beall, Pendleton. 2d Lieut., Infantry, O. R. C., U. S. A.

Beam, Carl Eugene. 2d Lieut., Engineers, U. S. A., 541st Engrs., A. E. F., France.

Bean, Paul Jones. Civ. Engr., U. S. N.

Beard, Robert S. Capt., Quartermaster Corps, U. S. A.; Engr. of Water and Sewers, Utilities Branch, Camp Lee, Va.

Beebe, James W. Capt., Engineers, U. S. A.

Beeman, Thomas R. Capt., Engineers, U. S. A., Care, Chf. Engr., A. E. F., France.

Begg, R. B. H. Capt., Engineers, U. S. A., A. E. F., France.

Behrman, I. E. Capt., Engineers, U. S. A., Care, C. E. O., A. E. F., France.

Bell, George Edward. Lieut., Canadian Engrs., Care, Dominion Bridge Co., Ltd., Montreal, Que., Canada.

Bell, Harry W. Capt., Engineers, U. S. A., 5th Bn., 22d Engrs., A. E. F., France.

Bellinger, L. F. Commander, Civil Engineer Corps, U. S. N.

Benham, Claude Gilbert. Capt., Coast Artillery, U. S. A.

Benham, W. L. Maj., Quartermaster Corps, U. S. A.

Bennett, John W. F. Maj., Quartermaster Corps, U. S. A., Constr. Div.

Bennison, Ernest William. 1st Lieut., Engineers, U. S. A., 23d Engrs.

Benson, Orville. Maj., Engineers, U. S. A., A. E. F., France.

Berdeau, Ray W. Capt., Engineers, U. S. A.; Engr. Officer, 220th Engrs.

Bessey, Roy F. Lieut., U. S. A., Co. B, 57th Engrs., A. E. F., France.

Bickel, George R. Chf. Machinist's Mate, U. S. N. R. F.

Biddle, John. Maj.-Gen., U. S. A.

Billings, Fred M. Capt., Engineers, U. S. A.

Binckley, George Sydney. Maj., Engineers, U. S. A., 112th Engrs., A. E. F., France.

Birdseye, Claude H. Maj., Engineers, U. S. A., Office, Chf. of Artillery, A. P. O. 706, A. E. F., France.

Bishop, Roy P. 2d Lieut., Engineers, U. S. A.; Personnel Adjt., 35th Engrs., A. E. F., La Rochelle, France.

Bissell, C. T. Capt., Quartermaster Corps, U. S. A.

Bither, T. A. 2d Lieut., Signal Corps, Aviation Section, U. S. A.

Bixby, William H. Brig.-Gen., U. S. A. (*Retired*).

Black, Dudley F. Capt., Engineers, U. S. A., Co. C, 513th Engrs., A. E. F., France.

Black, E. B. Maj., A. S. (P.), U. S. A.

Black, G. G. Capt., Engineers, U. S. A.; Acting Adjt., 314th Engrs.

Black, James B. Capt., Engineers, U. S. A., Office, D. M. E. and E. S., A. P. O. 717, A. E. F., France.

Black, Ralph P. 1st Lieut., Engineers, U. S. A., 32d Engrs.

Black, Roger Derby. Col., Gen. Staff, U. S. A.

Black, William M. Maj.-Gen., U. S. A.; Chf. of Engrs., U. S. A.

Blackman, J. W. B. Lieut., Canadian Ry. Troops, C. E. F., France.

Blair, Alexander. 2d Lieut., Royal Engrs., B. E. F., France.

Blair, McCrea Parker. Capt., No. 1 Depot Bn., Manitoba Regt., Winnipeg, Man., Canada.

Blanchard, Murray. Maj., Engineers, U. S. A., 520th Engrs.

Blaauvelt, Louis D. Maj., Quartermaster Corps, U. S. A.

Blucher, Conrad M. von. 1st Lieut., Engineers, U. S. A.

Boesch, Clarence E. Capt., U. S. A., Co. B, 105th Engrs.

Boggs, F. C. Col., U. S. A.

Boland, Charles J. 1st Lieut., Signal Corps, U. S. A., 492d Constr. Div., A. E. F., France.

Bolger, Edwin Gibson. Barron Field, Everman, Tex.

Bolin, Harry W. Sergeant, Co. E, 23d Engrs.

Bolton, Frank L. Capt., Engineers, U. S. A.

Bond, P. S. Col., U. S. A., 107th Engrs.; Div. Engr., 32d Div., Army Engr. School, U. S. P. O. 714, A. E. F., France.

Boorman, Kitchell M. Lieut., U. S. A., Office, Chf. Engr., 2d Army, A. P. O. 784, A. E. F., France.

Booth, Raymond. 1st Lieut., Engineers, U. S. A., 54th Engrs.

Borchers, Perry E. Capt., Engineers, U. S. A.

Borden, Guy. Lieut., Engineers, U. S. A.

Boschke, Guy. Maj., Engineers, U. S. A., M. P. O. 705, A. E. F., France.

Bott, C. N. Capt., Engineers, U. S. A., 27th Engr. Service Co. (Forestry), A. E. F., France.

Boult, Charles N. 2d Lieut., 28th Reinforcements, New Zealand Engrs., N. Z. E. F., Care, P. O., Wellington, New Zealand.

Bowe, Thomas F. Capt., Quartermaster Corps, U. S. A., Constr. Div.

Bowen, Charles K. Capt., Engineers, U. S. A.

Bowie, William. Maj., Engineers, U. S. A.

Bowne, Sidney B. 2d Lieut., U. S. Public Health Service.

Boyd, George R. Capt., Engineers, U. S. A., A. E. F., France.

Boyden, Harry C. Maj., Engineers, U. S. A.

Brace, James H. Maj., U. S. A., 22d Engrs., A. E. F., France.

Bragg, Kendal B. Lieut., Civil Engineer Corps, U. S. N.

Braly, Raymond F. 1st Lieut., Engineers, U. S. A.

Braunworth, Percy L. Capt., Engineers, U. S. A., Care, Director-General of Transportation, Army P. O. 705, A. E. F., France.

Breck, Charles R., Jr. Capt., Engineers, U. S. A., 31st Engrs., A P. O. 718, A. E. F., France.

Bres, Edward Sedley. Capt., Engineers, U. S. A.; Adjt., 114th Engrs., 1st Army Corps, A. E. F., France.

Brewster, Henry B. Capt., Engineers, U. S. A., and Adjt., 66th Engrs., A. E. F., France.

Breymann, John B., Jr. 2d Lieut., Coast Artillery, U. S. A., 22d Co.

Briggs, Robert W. 2d Lieut., Signal Corps, Aviation Section, U. S. A., 73d Aero Constr. Squadron.

Bright, Graham B. Capt., Engineers, U. S. A., and Regimental Adjt., 305th Engrs. (Pioneers).

Brinkley, Milo H. Capt., Engineers, U. S. A.

Bronson, Howard F. Capt., Sanitary Corps, U. S. A.

Brook, A. E. Capt., Royal Engrs., B. E. F., France.

Brooking, J. H. Capt., Engineers, U. S. A., Co. B, 12th Engrs. (Ry.), A. E. F., France.

Brooks, Josiah R. 1st Lieut., Engineers, U. S. A.

Brower, I. C. Maj., Quartermaster Corps, U. S. A., Constr. Div.

Brown, Charles E. Capt., Engineers, U. S. A.

Brown, Clarence C. Capt., Engineers, U. S. A.; Bn. Adj't., 12th Engrs. (Ry.), A. E. F., France.

Brown, Earl I. Col., U. S. A., 317th Engrs.

Brown, Elbert C. Capt., Engineers, U. S. A., 217th Engrs.

Brown, Elliot C. Lt.-Commander, U. S. N. R. F.

Brown, H. Whittemore. 2d Lieut., Engineers, U. S. A., A. E. F., France.

Brown, Levant R. Capt., Engineers, U. S. A.

Brown, Marshall W. Maj., Engineers, U. S. A., P. O. 702, A. E. F., France.

Brown, Norman F. Maj., Railroad Transportation Corps, U. S. A., Care, Director-Gen. of Transportation, A. E. F., France.

Brownell, E. H. Commander, Civil Engineer Corps, U. S. N.

Bruner, Louis S. 1st Lieut., U. S. A., Co. I, 23d Engrs., A. E. F., France.

Brush, Carl F. Capt., Engineers, U. S. A., A. P. O. 716, A. E. F., France.

Bruton, Philip G. 2d Lieut., A. S. (A. P.), U. S. A.

Buchanan, Warren Henderson. Ensign, U. S. N. R. F.

Bucher, Harold F. Lieut., Engineers, U. S. A., 544th Engrs., A. E. F., France.

Buck, Walter Van. Capt., Engineers, U. S. A., 23d Engrs.

Bull, George M. Civ. Engr., U. S. N. R. F.

Bunker, George H. Capt., Engineers, U. S. A., 306th Engrs.

Bunker, Stephen S. Capt., Engineers, U. S. A., Co. A, 72d Engrs., A. E. F., France.

Burd, Edward M. Capt., Coast Artillery, U. S. A.

Burdett, O. L. Capt., Engineers, U. S. A., Co. A, 25th Engrs., A. E. F., France.

Burgess, Harry. Col., U. S. A.

Burkett, Joseph M. Capt., Engineers, U. S. A., A. E. F., France.

Burky, C. R. Capt., Signal Corps, Aviation Section, U. S. A.

Burr, Edward. Col., Engineers, U. S. A., Manila, Philippine Islands.

Burrell, Glenn S. Lt.-Commander, Civil Engineer Corps, U. S. N.

Burrowes, H. G. Capt., Engineers, U. S. A., Co. B, 25th Engrs., A. E. F., France.

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Burton, William. Capt., Engineers, U. S. A., 521st Engrs., A. E. F., France.

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Bush, Lincoln. Col., Quartermaster Corps, U. S. A.

Bushnell, Howard B. Capt., Engineers, U. S. A., 23d Engrs.

Busse, Franz A. Capt., Engineers, U. S. A.; Director of Military Eng. and Engr. Supplies of France, Tours, France.

Butler, John Soule. Lt.-Col., Engineers, U. S. A.

Butler, Millard A. Col., Quartermaster Corps, U. S. A.

Butler, William P. Lieut., U. S. N. R. F.

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Byrne, Thomas Sneed. Capt., Ordnance, U. S. A.

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Cameron, Harry Frank. Lt.-Col., U. S. A., 209th Engrs.

Camp, George Dashiell. 1st Lieut., Engineers, U. S. A., 316th Engrs.

Campbell, Charles C. Corporal, Casual Co., Medical Detachment No. 2, U. S. A.

Canfield, George Hathaway. Lt.-Col., Engineers, U. S. A., 112th Engrs., A. E. F., France.

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Carlson, Carl Alexius. Commander, Civil Engineer Corps, U. S. N.

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Case, Charles A. Capt., Engineers, U. S. A., 314th Engrs., 87th Div., A. E. F., France.

Cate, Charles Edward. Capt., U. S. A., 45th Engrs., A. E. F., France.

Caton, John H., 3d. Capt., Engineers, U. S. A., Co. F, 33d Engrs.

Cattell, William A. Maj., Engineers, U. S. A.

Cerny, John W. Maj., Quartermaster Corps, U. S. A.

Chadwick, Maurice F. Corporal, Battery C, 6th Regt., 2d Brigade, F. A. R. D., Camp Jackson, S. C.

Chamberlaine, Robert L. Capt., Air Service (A. P.), U. S. A.

Chambers, Frank T. Capt., Civil Engineer Corps, U. S. N.

Chandler, William E. Master Gunner, Headquarters Co., 55th Artillery, C. A. C., A. P. O. 723, A. E. F., France.

Chapman, Mellville D. Capt., U. S. Marine Corps, Machine Gun Bn., 5th Brigade, A. E. F., France.

Chapman, S. A. 1st Lieut., U. S. A., Headquarters, 2d Bn., 10th Engrs. (Forestry), A. E. F., France.

Charnley, Walter. 1st Lieut., Engineers, U. S. A.

Chase, Clifford E. Maj., Engineers, U. S. A., 4th Engrs.

Chase, Dean. 1st Lieut., Coast Artillery, U. S. A., Battery E, 62d Regt., C. A. C., A. E. F., France.

Cheney, Sherwood A. Brig.-Gen., U. S. A.; Director, Army Transport Service, A. P. O. 717, A. E. F., Tours, France.

Cherry, Alan Gordon. 1st Lieut., U. S. A., 301st Engrs.

Chevalier, Willard T. Maj., Engineers, U. S. A., 11th Engrs. (Ry.), A. E. F., France.

Childs, James A. Capt., Sanitary Corps, U. S. A.

Chipley, Dudley. Capt., Quartermaster Corps, U. S. A., Constr. Div.

Chittenden, Albert Frederick. Capt., Engineers, U. S. A., 18th Engrs. (Ry.), A. E. F., France.

Christensen, George A. Maj., Quartermaster Corps, U. S. A.

Christophers, Reginald Gillon. (No. 60286), 2d Lieut., 34th Reinforcements, N. Z. E. F., Care, G. P. O., Wellington, New Zealand.

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Churchill, Percival M. Maj., Engineers, U. S. A., 538th Engrs., A. P. O. 752, A. E. F., France.

Churchill, Robert C. Lieut., U. S. A., Co. F, 12th Engrs. (Ry.), A. E. F., France.

Claiborne, Herbert A., Jr. 2d Lieut., Signal Corps, U. S. A. (*Unassigned*).

Clark, Ernest A. Capt., Engineers, U. S. A.

Clark, Howard F. Capt., Engineers, U. S. A., A. E. F., France.

Clarke, Harry L. 1st Lieut., Engineers, U. S. A., Co. F, 28th Engrs., A. E. F., France.

***Clarke, Thomas C.** Col., U. S. A., 110th Engrs., A. P. O. 743, A. E. F., France.

Clarke, W. D. Capt., Engineers, U. S. A., 23d Engrs. (Highway), A. E. F., France.

Clarkson, Charles D. S. Capt., U. S. A., 472d Engrs.

Class, C. Frank. Capt., Engineers, U. S. A.

Clayton, Thomas W. Capt., Engineers, U. S. A., A. E. F., France.

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Cobb, William R. Lieut., U. S. N. N. V.

Cochrane, Victor Hugo. Maj., Quartermaster Corps, U. S. A.

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Coe, David. Capt., R. E., Care, R. C. E., Communications, A. P. O., S 1, B. E. F., France.

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Coleman, Eugene H. Capt., Engineers, U. S. A., 312th Engrs.

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Compton, R. Keith. Maj., Engineers, U. S. A.

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Converse, Joseph B. Lieut., U. S. A., Constr. Div.

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Copeland, Robert Morris. Capt., Engineers, U. S. A.

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Cotter, Carl Henry. Lieut., Civil Engineer Corps, U. S. N.

Cottman, L. Warrington. Maj., Chemical Warfare Service, U. S. A.

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Crawford, Ivan C. Maj., Engineers, U. S. A., 115th Engrs., A. E. F., France.

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Crocker, Herbert Samuel. Lt.-Col., Quartermaster Corps, U. S. A.

Crocker, James R. Maj., Engineers, U. S. A., 106th Engrs.

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Crowell, Francis S. Capt., Quartermaster Corps, U. S. A.

Cudebec, Albert B. Capt., Engineers, U. S. A., U. S. M. P. O. No. 702, A. E. F., France.

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Cutler, Leon G. Capt., Coast Artillery, U. S. A., 57th Artillery, C. A. C., A. E. F., France.

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Daly, John W. Lieut., Infantry, U. S. A.

Danforth, George Clapp. Capt., Engineers, U. S. A., 602d Engrs., A. E. F., France.

Darling, Clinton Stowell. Capt., U. S. A., 108th Engrs., A. P. O. 750, A. E. F., France.

Davidson, George B. 2d Lieut., Engineers, U. S. A., Headquarters, 26th Div., A. P. O. 709, A. E. F., France.

Davies, J. P. Capt., Ordnance, U. S. A.

Davis, Chandler. Capt., Engineers, U. S. A., 6th Engrs., A. E. F., France.

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Davis, John C. Capt., Coast Artillery, U. S. A.

Davis, Robert M. Capt., Engineers, U. S. A., Co. C, 57th Engrs. (Inland Waterways), A. P. O. 702, A. E. F., France.

Davy, J. J. 1st Lieut., U. S. A., 23d Engrs.

Day, Warren E. Capt., Engineers, U. S. A., 8th Co., Transportation Corps, A. P. O. 701, A. E. F., France.

Dean, Bertram D. Capt., Engineers, U. S. A., C. O., 2d Bn., 25th Engrs., A. E. F., France.

Dean, Willis J. Capt., Quartermaster Corps, U. S. A.

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Deets, Edward H. Capt., Quartermaster Corps, U. S. A.

DeGraff, Carlton R. 1st Lieut., Engineers, U. S. A.

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Dent, Elliott J. Col., Engineers, U. S. A., 104th Engrs., A. P. O. 765, A. E. F., France.

Derby, George McC. Lt.-Col., Engineers, U. S. A.

Diesem, Harry C. Capt., Engineers, U. S. A., 404th Engr. Depot Detachment.

Diffenderfer, Claude O. Capt., Engineers, U. S. A., 534th Engrs., A. E. F., France.

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Dobson, Gilbert C. Maj., Engineers, U. S. A.

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Dohm, Edward Clarence. Capt., Engineers, U. S. A.

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Douglass, Louis R. Capt., Quartermaster Corps, U. S. A.

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Drury, William F. Capt., Engineers, U. S. A.

Du Bois, George B. 1st Lieut., Engineers, U. S. A., Commanding 6th Engr. Train, A. E. F., France.

Dunlap, Walter H. Capt., Engineers, U. S. A.

Dunn, Beverly C. Maj., Engineers, U. S. A.

Dunshee, Bertram K. 1st Lieut., Engineers, U. S. A., 316th Engrs., A. E. F., France.

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Durham, Henry Welles. Maj., Engineers, U. S. A., in Chg. of Roads, D. of C. and F., A. E. F., Tours, France.

Durham, Leicester. Capt., Engineers, U. S. A.; Personnel Adjt., 116th Engrs.

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Easton, Russell B. Capt., Engineers, U. S. A.

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Edgerton, G. E. Col., Engineers, U. S. A.

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Elliott, Malcolm. Lt.-Col., Engineers, U. S. A., 309th Engrs., A. O. P. 701, A. E. F., France.

Elliott, Percival. Private, Co. D, 33d Engrs.

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Embry, Aymar, 2d. Capt., Engineers, U. S. A., Camouflage Section, A. E. F., France.

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Emerson, Raffe. Ensign, Flying Corps, U. S. N. R. F.

Emory, Lloyd T. Capt., Ordnance, U. S. A.

Endicott, Mordecai T. Rear-Admiral, Civil Engineer Corps, U. S. N.

Enger, Arthur L. Capt., Engineers, U. S. A.

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Farley, M. M. 1st Lieut., Engineers, U. S. A.

Farrin, James M. Capt., Engineers, U. S. A., 2d Engrs., A. E. F., France.

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Finnell, Woolsey. Lt.-Col., Engineers, U. S. A., A. E. F., France.

Fisher, George Joseph. 1st Lieut., Engineers, U. S. A., 219th Engr. Train.

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Fitzpatrick, Mark William. Sergeant, 10th Engr. Service Co. (Forestry), A. E. F., France.

Flagg, Herbert J. Capt., Coast Artillery, U. S. A.

Flagler, C. A. F. Brig.-Gen., U. S. A., 5th F. A. Brigade, A. E. F., France.

Fleming, Burton P. Capt., Engineers, U. S. A.

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Fowler, Frederick Hall. Capt., Engineers, U. S. A.

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Fox, Robert Myron. Capt., Engineers, U. S. A.

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Fry, Alfred Brooks. Capt., U. S. N. N. V.

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Galbreath, Albert W. Capt., Engineers, U. S. A., Co. D, 12th Engrs. (Ry.), A. E. F., France.

Gallagher, Leonard Bruce. Capt., Engineers, U. S. A., 301st Engrs., A. E. F., France.

Galvin, James Augustine. 1st Lieut., Engineers, U. S. A.; Engr. Officer, Army General Staff Coll., U. S. A. P. O. No. 714, A. E. F., France.

Garlinghouse, R. L. Chf. Machinist's Mate, U. S. N. R. F. (*Unassigned*).

Garnett, Benjamin J. 1st Lieut., Engineers, U. S. A. (*Unassigned*), A. E. F., France.

Garrett, Robert P. Capt., Ordnance, U. S. A.

Gatens, Ray S. 1st Lieut., Engineers, U. S. A., Co. C, 42d Engrs., A. E. F., France.

Gaumer, A. W. 1st Lieut., Engineers, U. S. A.

Gayler, E. R. Commander, Civil Engineer Corps, U. S. N., Port au Prince, Haiti.

Geib, George Albert. Capt., Engineers, U. S. A., Co. A, 527th Engrs., Service Bn., A. P. O. 769, A. E. F., France.

Genung, J. H., Jr. Lieut., Engineers, U. S. A.

George, Howard H. Capt., Engineers, U. S. A., Co. E, 305th Engrs.

Getty, Lorenzo T. 1st Lieut., Signal Corps, Aviation Section, U. S. A., 75th Aero Constr. Squadron, A. E. F., France.

Gibbs, E. A. Maj., 15th U. S. Engrs. (Ry.), A. E. F., France.

Giesting, Frank A. Col., Engineers, U. S. A., 302d Engrs., A. E. F., France.

Giffels, William C. 1st Lieut., Engineers, U. S. A.

Giles, John A. Capt., Quartermaster Corps, U. S. A.

Gilman, E. Dow. 1st Lieut., Chemical Warfare Service, U. S. A.

Gladding, James N. Capt., Engineers, U. S. A. (*Unassigned*), A. E. F., France.

Glander, John Henry, Jr. Lieut. (Junior Grade), Civil Engineer Corps, U. S. N. R. F.

Glazier, W. L. Maj., Engineers, U. S. A.; Commanding Officer, 525th Engrs., Service Bn., A. E. F., France.

Glessner, Maurice D. Lieut., Engineers, U. S. A.

Goddard, Leslie Drew. Capt., Engineers, U. S. A.

Godfrey, Alex. H. Asst. Paymaster, U. S. N. R. F.

Godfrey, Stuart C. Col., Engineers, U. S. A.; Executive Officer for Chf. Engr., Army of Occupation, A. E. F., Coblenz, Germany.

Goethals, George R. Col., U. S. A.; Engr. Officer, Headquarters, Army Artillery, 1st Army, A. E. F., France.

Goethals, George W. Maj.-Gen., U. S. A.

Golden, William A. Ensign, U. S. N. R. F., U. S. S. *Mary Alice*.

Goldsmith, Clarence. Maj., Quartermaster Corps, U. S. A.

Gooch, Carl Joseph. Co. E, 32d Engrs., U. S. A.

Goodman, Benjamin. 2d Lieut., Engineers, U. S. A., 504th Engrs., Headquarters, A. E. F., France.

Goodman, Leon. Capt., U. S. A., and Adj't., 109th Engrs.

Gordon, John Blake. Care, Chf. Engr. Officer, General Headquarters, A. E. F., France.

Gordon, Samuel. Lt-Commander, Civil Engineer Corps, U. S. N.

Gotwals, John C. Lt.-Col., Engineers, U. S. A., Care, O. C. E., G. H. Q., A. P. O. 706, A E. F., France.

Gough, William T. Maj., Engineers, U. S. A.

Gould, William T. Capt., Engineers, U. S. A., U. S. M. P. O. 705, A. E. F., France.

Gow, C. R. Maj., Quartermaster Corps, U. S. A.

Grady, Frank L. Candidate, I. C. S., 3d Co., Valbonne (Ain.), A. E. F., France.

Graff, George W. Candidate, Field Artillery Central Officers' Training School, 29th Training Battery, Camp Zachary Taylor, Ky.

***Grant, John R.** Maj., M. C., R. E., Offizier-Gefangenenlager, Stralsund (Danholm), Germany.

Grant, Kenneth C. Maj., Quartermaster Corps, U. S. A.

Grant, U. S., 3d. Col., U. S. A.

Gravell, William Henry. Capt., Engineers, U. S. A., A. E. F., France.

Graves, E. M. Maj., Engineers, U. S. A., 529th Engrs.

Gray, Earle P. 1st Lieut., Engineers, U. S. A., 16th Engrs. (Ry.), A. E. F., France.

Gray, William B. Maj., Engineers, U. S. A.

Green, Charles N. Maj., Engineers, U. S. A.

Green, Charles Samuel. Capt., Engineers, U. S. A., 535th Engrs.

Green, Clarence Jasper. 1st Lieut., Oregon Coast Artillery.

Green, F. W. Lt.-Col., Transportation Corps, U. S. A.; Gen. Supt., Army Transport Service, A. E. F., France.

Greene, F. S. Capt., U. S. A., Co. B, 302d Engrs.

Gregory, Luther E. Capt., Civil Engineer Corps, U. S. N.

Gregory, Whitney I. Capt., Engineers, U. S. A. (*Unassigned*).

Gregory, William B. Maj., Engineers, U. S. A., A. E. F., France.

Grehan, Bernard H. 1st Lieut., U. S. A., 312th Engrs.

Grigsby, Walter B. 1st Lieut., Engineers, U. S. A., 9th Engrs. (Mounted).

Grimes, James E. Capt., Quartermaster Corps, U. S. A.

* Awarded the Military Cross (British).

Grindrod, Irvin S. 1st Lieut., Engineers, U. S. A. (*Unassigned*).
Griswold, Harry T. 1st Lieut., Coast Artillery, U. S. A.
Griswold, Hector C. Lieut. (Junior Grade), Civil Engineer Corps, U. S. N.
Grodske, Walter J. Capt., Engineers, U. S. A.
Gross, Frederick H. 1st Lieut., Engineers, U. S. A., Co. B, 303d Engrs., A. E. F., France.
Gross, Henry McC. 1st Lieut., U. S. A., 149th Div., Machine Gun Bn., A. E. F., France.
Grunauer, Mortimer. Sergeant, Headquarters Co., 304th F. A., A. E. F., France.
Guillemette, Joseph D. 2d Lieut., Air Service, U. S. A., Air Service Depot No. 1, A. P. O. 702, A. E. F., France.
Gunther, Herman Dietrich. Co. B, 147th Inf., U. S. A.
Guptill, Joseph R. Private, Co. E, 2d Bn., 23d Engrs., A. E. F., France.
Gutman, David. Maj., Engineers, U. S. A.
Hains, Peter C. Maj.-Gen., U. S. A. (*Retired*).
Haldeman, Walter S. Capt., Engineers, U. S. A.
Hale, Richard King. Lt.-Col., U. S. A., 101st F. A., A. E. F., France.
Hall, Benjamin M., Jr. 1st Lieut., Engineers, U. S. A., Co. B, 26th Engrs., A. P. O. No. 701, A. E. F., France.
Hall, Charles L. Col., Engineers, U. S. A., A. P. O. 731, A. E. F., France.
Hall, Gilbert G. 1st Lieut., Engineers, U. S. A., 20th Engrs.
Hall, Julius R. 1st Lieut., Engineers, U. S. A., 515th Service Bn.
Hall, Louis W. Capt., Engineers, U. S. A., Care, Director of Const. and Forestry, S. O. S., P. O. 717, A. E. F., France.
Hall, Oliver Antrum. Capt., Engineers, U. S. A., A. E. F., France.
Hall, Warren E. Capt., Engineers, U. S. A., Co. D, 506th Engrs. (Service Bn.), Base No. 2, A. E. F., France.
Hallberg, Arthur S. 1st Lieut., U. S. N. R. F., U. S. S. *Quinnebaug*.
Hallihan, John P. Maj., Engineers, U. S. A., Care, D. M. E. and E. S., A. P. O. 717, A. E. F., France.
Halsema, E. J. Capt., Engineers, U. S. A.
Hamilton, Edward P. 2d Lieut., Field Artillery, U. S. A., 306th F. A.
Hammill, Harold B. Lieut.; Asst. Civ. Engr., U. S. N. R. F., U. S. Naval High Power Radio Detachment, U. S. N. P. O., Bordeaux, France.
Hammond, John M. Capt., Quartermaster Corps, U. S. A.
Hanavan, William L. 1st Lieut., U. S. A., 9th Inf.; Adj't., 2d Bn., A. E. F., France.
Hancock, Henry Sydney, Jr. Lieut., Royal Engrs.; Field Engr., First Corps, B. E. F., France.

Hanique, Jules E. Maj., Engineers, U. S. A., 537th Engrs., A. E. F., France.

Hansen, Paul. Capt., Engineers, U. S. A. Headquarters, Advance Section, S. O. S., Office of Chf. Engr., A. E. F., France.

Hapgood, Frederic H. Headquarters Co., 26th Engrs., A. E. F., France.

Hardaway, Benjamin H., Jr. Maj., U. S. A.

Harding, Chester. Col., Engineers, U. S. A.; Governor of the Panama Canal, Balboa Heights, Canal Zone, Panama.

Harding, Ralph L. Capt., Engineers, U. S. A., 35th Engrs.

Harley, Alfred F. Field Clerk, Engineers, U. S. A., A. E. F., France.

Harmon, W. G. Capt., Sanitary Corps, U. S. A.

Harps, Harry M. Capt., Engineers, U. S. A.

Harrah, O. W. Capt., Engineers, U. S. A.

Harrington, Arthur W. 1st Lieut., Sanitary Corps, U. S. A.

Harris, F. R. Rear-Admiral, U. S. N.

Harris, Frank S. M. Lieut., U. S. N. R. F.

Hart, S. A. 1st Lieut., Engineers, U. S. A., 23d Engrs.

Harter, A. F. Capt., Engineers, U. S. A., Co. B, 527th Engrs., A. P. O. 769, A. E. F., France.

Harts, William W. Brig.-Gen., U. S. A., G. H. Q., 1^{er} Echelon, B. E. F., France.

Hasbrouck, Oscar. Capt., U. S. A., Co. B, 522d Engrs., P. O. 747, A. E. F., France.

Haskins, C. A. Capt., Sanitary Corps, U. S. A.

Haskins, John C. 1st Lieut., Engineers, U. S. A., 22d Engrs.

Hastings, R. P. 1st Lieut., Engineers, U. S. A., Co. D, 26th Engrs., A. E. F., France.

Hatch, Frederick N. Capt., Engineers, U. S. A., 35th Engrs., A. E. F., France.

Hauser, Kenneth D. Capt., 18th Engrs. (Ry.), A. E. F., France.

Hawley, John B. Maj., Engineers, U. S. A., 503d Engrs., Service Bn., A. E. F., France.

Hawley, Robinson Wilber. Capt., Engineers, U. S. A., 403d Engrs.

Hayes, F. Eugene, Jr. Chf. Carpenter's Mate, U. S. N.

Hays, Donald S. Capt., Engineers, U. S. A.

Hays, John Coffee. Maj., Quartermaster Corps, U. S. A.

Hazelton, W. S. Capt., Ordnance, U. S. A.

Healey, Charles F. Capt., Engineers, U. S. A., A. P. O. No. 701, A. E. F., France.

Hebard, R. W. Maj., U. S. A., 5th Bn., 22d Engrs., A. E. F., France.

Heck, Nicholas H. Lt.-Commander, U. S. N. R. F.

Heed, Samuel D. Capt., Ordnance, U. S. A.

Hendricks, Ernest D. Capt., Engineers, U. S. A., Co. B, 303d Engrs.

Henning, Charles S., Jr. Master Engr., Co. A, 21st Engrs., A. E. F., France.

Henry, Earle Underwood. 1st Lieut., Engineers, U. S. A., 116th Engrs., Care, D. G. T., A. P. O. No. 717, A. E. F., France.

Herington, George B. Maj., Air Service (Production), U. S. A.

Herkness, Lindsay C. Col., Engineers, U. S. A.

Herzig, Solon. 1st Lieut., Engineers, U. S. A., Co. F, 25th Engrs., A. E. F., France.

Heslop, D. G. Capt., Royal Engrs., O. C. Surveys, Light Rys., E. E. F., Palestine.

Heslop, Paul L. Private, Ordnance, U. S. A.

Heuer, W. H. Col., U. S. A. (*Retired*).

Hewett, M. W. 1st Lieut., Engineers, U. S. A., 508th Service Bn.

Hews, Wellington P. Capt., Engineers, U. S. A., 62d Engrs., A. E. F., France.

Higgins, Charles H. Maj., Ordnance, U. S. A.

Hilder, Frazer C. Capt., Engineers, U. S. A., Goring Hotel, Grosvenor Gardens, London, W. 1, England.

Hiles, Elmer K. Maj., 15th U. S. Engrs. (Ry.), A. E. F., France.

Hilton, Harry L. Lieut., Civil Engineer Corps, U. S. N. R. F.

Hirzel, Alfred Sparks. Capt., 1st Delaware Inf.

Hjorth, Lawrence R. Raritan Ord. Depot, Metuchen, N. J.

Hoar, Allen. Civ. Engr., U. S. N. R. F.

Hobbs, Henry W. Maj., Engineers, U. S. A.

Hodges, H. F. Maj.-Gen., U. S. A.

Hoffman, Eugene R. Master Engr. (Senior Grade), U. S. A., 26th Engrs., A. E. F., France.

Hogan, John P. Maj., Engineers, U. S. A., Gen. Staff; Chf., G-2-C, 2d Army, A. E. F., France.

Holborn, Lewis A. Lieut., Engineers, U. S. A., 22d Engrs., A. E. F., France.

Hollyday, R. C. Capt., Civil Engineer Corps, U. S. N.

Holmboe, L. S. 2d Lieut., Motor Transport Corps, U. S. A.

Holmes, Howard W. U. S. A.

Holmes, Thomas H. Capt., U. S. A., 311th Engrs., A. E. F., France.

Holstlaw, Charles Henry. 1st Lieut., Infantry, U. S. A., 124th Inf.

Holt, Andrew H. Capt., Engineers, U. S. A.

Hoopes, Edgar M., Jr. Capt., Quartermaster Corps, U. S. A.

Hoover, A. Pearson. Maj., Constr. Div., Quartermaster Corps, U. S. A.

Hopkinson, George Martin. Capt., Quartermaster Corps, U. S. A.

Hopper, Jean G. L. Secy. to Capt. Escale, 3d Reg. de Marche, 1^{er} Etranger (Foreign Legion), 43 Avenue de l'Opera, Paris, France.

Horton, C. K. Capt., Engineers, U. S. A.; Adjt., 2d Bn., 111th Engrs., A. E. F., France.

Horton, Dwight Fred. Capt., Engineers, U. S. A.

Hough, David L. Maj., Quartermaster Corps, U. S. A.

Howard, Conway Robinson. Capt., U. S. A., 17th Engrs. (Ry.), A. E. F., France.

Howard, Gerald B. 1st Lieut., Engineers, U. S. A., Co. E, 17th Engrs. (Ry.), A. E. F., France.

Howard, Robert C. Capt., Engineers, U. S. A.; Bn. Adj't., 138th Engrs.

Howe, H. F. Capt., Engineers, U. S. A.

Howe, Wilson Tyler. Capt., Quartermaster Corps, U. S. A.

Howell, Clarence S. Capt., Engineers, U. S. A.

Howell, Robert P. Capt., Quartermaster Corps, U. S. A.

Hoxie, Richard L. Brig.-Gen., U. S. A. (*Retired*).

Huber, Joseph E. Lieut., U. S. A.

Huber, William T. Capt., Engineers, U. S. A., Co. F, 212th Engrs., 12th Div.

Hudson, H. W. Maj., U. S. A.; Staff of Director-Gen. of Transportation, Care, Director-Gen. of Transportation, A. E. F., France.

Hughes, George L. 2d Lieut., Engineers, U. S. A.

Huie, Irving V. A. Capt., U. S. A., Co. B, 1st Engrs., A. E. F., France.

Hulburd, L. S. Capt., Engineers, U. S. A.

Hull, George B. Maj., Canadian Forestry Corps, Care, C. H. Orme, Prince Rupert, B. C., Canada.

Hull, Gordon B. Gifford. Capt., Royal Engrs.; The Grange, Horton, Northampton, England.

***Hulsart, C. Raymond.** Maj., Engineers, U. S. A.

Humann, Edwin August. Master Engineer, Headquarters, 4th Engrs., 4th Div., Army of Occupation, A. E. F., Bad Bertrich, Germany.

Humphrey, Gilbert Edwin. Maj., Engineers, U. S. A.

Humphreys, Charles Raymond. Capt., U. S. A., 105th Engrs.

Humphreys, Ewing S. Capt., Engineers, U. S. A.

Hunt, Charles A. Lieut., Civil Engineer Corps, U. S. N. R. F.

Hunt, Conway B. Maj., Engineers, U. S. A. (*Unassigned*).

Hunt, Leigh A. Maj., 110th Engrs., A. E. F., France.

Hurlbut, H. B. Capt., Ordnance, U. S. A.

Hurley, John Patrick. Capt., U. S. A., Co. K, 165th Inf., A. E. F., France.

Husson, William M. Capt., U. S. A., 82d F. A.

Huston, Tillinghast L'Hommedieu. Maj., Engineers, U. S. A., 1st Bn., 16th Engrs. (Ry.), A. E. F., France.

Hyde, Charles G. Capt., Sanitary Corps, U. S. A., Bn. 7, Co. 28.

Hyde, Richard Lewis. 1st Lieut., Engineers, U. S. A., 10th Engrs., Camp 3, A. E. F., St. Nazaire, France.

* Awarded the Distinguished Service Cross and the Military Cross (British).

Hynds, Harold D. Capt., U. S. A.

Ingalls, O. L. Maj., Engineers, U. S. A., 139th Engrs.

Irish, Leland W. Master Engr., 42d Bn., 20th Engrs.

Jackson, Dugald C. Maj., Engineers, U. S. A., A. E. F., France.

Jackson, Jesse A. Maj., 116th Bn., 41st Div., Signal Corps, U. S. A.

Jackson, W. B. Maj., Quartermaster Corps, U. S. A.

Jacobovsky, Gilbert G. Capt., Engineers, U. S. A., 55th Engrs., A. P. O. 738, A. E. F., France.

Jacobs, Joseph. Maj., Engineers, U. S. A., 509th Engrs. (Service Bn.), A. E. F., France.

Jacobsen, Hans R. Capt., U. S. A., 124th Engrs.

***Jacobson, Alfred Leon.** Capt., Commandant, 26^{me} Batterie, 246^{me} Reg. d'Artillerie de Campagne, Secteur Postal 30, Armée Française en Campagne, France.

Jacques, Henry L. Capt., Engineers, U. S. A.

Jaenicke, William H. 1st Lieut., Engineers, U. S. A.

James, Alfred R. 1st Lieut., Quartermaster Corps, U. S. A.

James, Frank T. Capt., Engineers, U. S. A.

James, Robert Lane. Capt., Engineers, U. S. A., 17th Engrs. (Ry.), A. E. F., France.

Jaques, J. D. Lieut., Civil Engineer Corps, U. S. N. R. F.

Jarvis, Clarence S. Capt., Engineers, U. S. A.

Jasper, T. McLean. Capt., Imperial Forces; Director of Signalling, No. 2, R. G. A., Cadet School, Maresfield Park, Sussex, England.

Jenkins, Charles M. Capt., Engineers, U. S. A.

Jenkins, Jenks B. Maj., Engineers, U. S. A.

Jennings, Charles A. Capt., Quartermaster Corps, U. S. A., Constr. Div.

Jennings, Percy J. Capt.; Adjt., 5th Pioneers Canadians (late 4th Pioneers), Care, Canadian Bank of Commerce, 2 Lombard St., London, E. C., England.

Jerrard, Leigh P. Capt., U. S. A., Headquarters, 67th Artillery Brigade, A. E. F., France.

Jervey, Henry. Brig.-Gen., U. S. A.

Jessup, Walter E. 1st Lieut., Engineers, U. S. A., Co. C, 39th Engrs.

Jewell, Albert Hartwell. 1st Lieut., Sanitary Corps, U. S. A., Co. F, 26th Engrs., A. E. F., France.

Johnson, Frank Melvin S. Maj., U. S. A., Gen. Staff; Asst. Chf. of Staff, 16th Div.

Johnson, George A. Lt.-Col., Quartermaster Corps, U. S. A., Constr. Div.

Johnson, Halbert T. Sergeant, 472d Engrs.

Johnson, Harvey S. 1st Lieut., U. S. A., Headquarters, 78th Div., Field Artillery, A. E. F., France.

* Awarded the Croix de Guerre.

Johnson, Hollister. 2d Lieut., Engineers, U. S. A., Co. C, 1st Bn., 20th Engrs., A. E. F., France.

Johnson, J. M. Col., U. S. A., 117th Engrs., A. E. F., France.

Johnson, Louis R. Capt., Engineers, U. S. A., Co. A, 516th Engrs., A. P. O. 713, A. E. F., France.

Jones, Harry E. Private, Aviation Section, Signal Corps, U. S. A., Meteorological Section.

Jones, Harvey W. Capt., Quartermaster Corps, U. S. A.

Jones, Henry L. Maj., Engineers, U. S. A. (*Unassigned*).

Jones, John H. Capt., 1st Canadian Pioneers, B. E. F., France.

Jones, Jonathan. Maj., Engineers, U. S. A., 23d Engrs., A. E. F., France.

Jones, Lewis Allen. Capt., Engineers, U. S. A.

Jones, Paul Sidney. 2d Lieut., Engineers, U. S. A.

Jones, Percival C. Corporal, Co. G, 23d Engrs., A. E. F., France.

Jones, Sidney G. Capt., Engineers, U. S. A., Headquarters Co., 35th Engrs., A. P. O. 735, A. E. F., France.

Jordan, Harry E. Capt., Quartermaster Corps, U. S. A.

Joseph, Jacob. Private, Meteorological Section, Signal Corps, U. S. A., A. E. F., France.

Jouine, G. P. F. Lieut., 504^{me} Regt. d'Artillerie, A. S. No. 12, par B. C. M., Paris, France.

Judson, William V. Brig.-Gen., U. S. A.

Kane, Daniel C. 1st Lieut., Engineers, U. S. A., 466th Pontoon Train.

Kane, Irving P. Capt., Engineers, U. S. A., 45th Engrs., A. E. F., France.

Karnopp, Edwin B. Capt., Engineers, U. S. A., 22d Engrs., A. E. F., France.

Kastenhuber, E. G., Jr. Capt., Sanitary Corps, U. S. A.

Kaufmann, Ernst G. Lieut., Quartermaster Corps, U. S. A., 307th Supply Train, A. P. O. 742, A. E. F., France.

Keenan, John T. Maj., Engineers, U. S. A., 2d Bn., Headquarters, 28th Engrs. (Quarry), A. E. F., France.

Keith, Gerald Marcy. 1st Lieut., Engineers, U. S. A.

Keller, Arthur R. Capt., Engineers, U. S. A.

Keller, Charles. Brig.-Gen., Engineers, U. S. A., A. P. O. 706, A. E. F., Chaumont, France.

Kelley, James A. Maj., Engineers, U. S. A.

Kelly, Earl W. Capt., Engineers, U. S. A., 1st Punishment Bn., A. P. O. 774, A. E. F., France.

Kelly, Hugh Ambrose. Lieut., Engineers, U. S. A.

Kelly, William. Col., Engineers, U. S. A., A. E. F., France.

Keys, Edward A. Capt., Engineers, U. S. A., Co. C, 511th Engrs. (Service Bn.), U. S. A. P. O. 738, A. E. F., France.

Khachadoorian, H. H. 1st Lieut., U. S. A., Care, Am. Peace Comm., A. E. F., Paris, France.

King, Clifford M. Capt., Engineers, U. S. A., 313th Engrs.

King, Eric T. Maj., Quartermaster Corps, U. S. A.

King, Howard L. 2d Lieut., Engineers, U. S. A., Co. B, 27th Engrs.

King, Thomas R. 1st Lieut., Engineers, U. S. A., 316th Engrs., A. E. F., France.

King, W. S. Capt., Quartermaster Corps, U. S. A.

Kingsley, E. A. Maj., Engineers, U. S. A., A. E. F., France.

Kingsley, George. Capt., Engineers, U. S. A.

Kinne, G. W. Capt., Engineers, U. S. A.

Kipp, Frederick M., Jr. 33d Engrs., U. S. A.

Kissack, A. B. Maj., Engineers, U. S. A., 515th Engrs., A. E. F., France.

Kitchen, Ernest. Capt., Quartermaster Corps, U. S. A.

Kittredge, Frank A. Capt., U. S. A., 48th Co., 20th Engrs., A. E. F., France.

Kittredge, Harry C. Capt., Engineers, U. S. A.

Kitts, Joseph A. Capt., Engineers, U. S. A., U. S. A. P. O. 701, A. E. F., France.

Kleinschmidt, H. S. Capt., Engineers, U. S. A.

Klinck, J. H. Maj., Quartermaster Corps, U. S. A., Constr. Div.

Kluegel, Harry A. Maj., Quartermaster Corps, U. S. A.

Knight, G. W. Capt., Engineers, U. S. A., 46th Engrs., A. E. F., France.

Kniskern, Philip Wheeler. Capt., Engineers, U. S. A.

Knollman, Enno P. Ensign, U. S. N. R. F.

Knost, W. A. 1st Lieut., Coast Artillery, U. S. A., Co. C, 55th Am. Train, C. A. C., A. P. O. 733, A. E. F., Cheffes, France.

Knox, Jean H. Lieut., U. S. N. R. F., Civ. Engrs.' Naval Air Forces.

Kohl, Frank E., Jr. Sergeant, Co. C, 302d Engrs., A. E. F., France.

Koop, Louis D. Capt., Quartermaster Corps, U. S. A.

Krach, Fred R. Private, Co. A, 23d Engrs.

Kreamer, A. W. 1st Lieut., Engineers, U. S. A. (*Unassigned*).

Krigbaum, Lowell G. 1st Lieut., Engineers, U. S. A., Care, Director of C. and F., A. E. F., France.

Kromer, Clarence H. 1st Lieut., U. S. A., 403d Engrs.

Kutz, Charles W. Brig.-Gen., U. S. A.

La Bach, Paul M. Maj., Engineers, U. S. A., Care, Director General of Transportation, A. E. F., France.

Labsap, Alfred H. 1st Lieut., Engineers, U. S. A., 114th Engrs.

La Forge, Frederick W. Maj., Engineers, U. S. A.

Lake, Edward N. Maj., Quartermaster Corps, U. S. A.

Lambert, Byron J. Maj., Engineers, U. S. A., 23d Engrs. (Highway).

Lamphere, Frank E. Col., Quartermaster Corps, U. S. A.

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Lancashire, Forest H. Capt., Engineers, U. S. A.

Lane, Albert L. Capt., Infantry, U. S. A.

Lansdale, John. Maj., Engineers, U. S. A., A. E. F., Tours, France.

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Lathbury, Benjamin Brentnall. Lt.-Col., Ordnance, U. S. A.

Laughlin, Harmon L. Capt., Engineers, U. S. A.; Topographical Officer, 108th Engrs.

Laverty, Samuel Perry. Regt. Sup. Sergeant, 316th Am. Tr., U. S. A.

Lawrence, Frank Elmaker. Capt., U. S. A., 17th Engrs. (Ry.), A. E. F., France.

Lawton, Richard M. Maj., Engineers, U. S. A., A. P. O. 721, A. E. F., France.

Lea, Sumter, Jr. 1st Lieut., Quartermaster Corps, U. S. A.

Leach, Harry R. Sergeant, 1st Class, Signal Corps, U. S. A.

LeBaron, R. W. P. 1st Lieut., Co. C, 13th Engrs. (Ry.), A. E. F., France.

Leckie, Alexander R. Capt., Engineers, U. S. A., 111th Engrs., A. E. F., France.

Lee, Alonzo Church. 1st Lieut., Infantry, U. S. A., 17th Machine Gun Bn., A. E. F., France.

Lee, Augustine L. Maj., U. S. A.; C. O., 504th Engrs.

Lee, Charles A. Lieut., Civil Engineer Corps, U. S. N. R. F.

Lee, Charles H. Capt., Engineers, U. S. A., Headquarters, 26th Engrs., A. E. F., France.

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Leeds, Charles T. Maj., Engineers, U. S. A.

Lehrbach, Henry G. Lieut., Civil Engineer Corps, U. S. N.

Leisen, Theodore A. Maj., Quartermaster Corps, U. S. A.

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Lemen, William C. S. Lt.-Col., Engineers, U. S. A.

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Lewis, Chester B. 1st Lieut., U. S. A., 564th Engr. Service Bn.

Lewis, F. H. Maj., Engineers, U. S. A.

Lewis, Harold McLean. 1st Lieut., U. S. A., Co. A, 502d Engrs., A. E. F., France.

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MacDiarmid, Milo S. Maj., Engineers, U. S. A.

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Mackenzie, Leon R. Capt., Quartermaster Corps, U. S. A.

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McKay, George A. Commander, Civil Engineer Corps, U. S. N.

McKenney, Charles A. Col., Engineers, U. S. A.

McKinstry, Charles Hedges. Brig.-Gen., U. S. A., 67th F. A. Brigade, A. E. F., France.

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***McLoud, Paul.** 1st Lieut., Engineers, U. S. A., Co. F, 11th Engrs., A. E. F., France.

McMeekin, Charles William. Maj., Engineers, U. S. A.

McMillan, W. Bruce. 1st Lieut., Engineers, U. S. A., A. E. F., France.

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Mail, Eugene Frederick. 1st Lieut., Engineers, U. S. A., 4th Engrs.

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Mangold, John Frederic. Capt., Engineers, U. S. A. (*Unassigned*).

Manning, William J. H. 2d Lieut., Engineers, U. S. A., 52d Engrs., A. E. F., France.

Mansfield, Newton. Lt.-Commander, U. S. N. (*Retired*).

March, George Miles. 1st Lieut., Engineers, U. S. A., 507th Engrs.

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Mendenhall, Herbert D. Capt., Engineers, U. S. A., U. S. M. P. O. 705, A. E. F., France.

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Miller, John O. 2d Lieut., Infantry, U. S. A.

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Morrow, Jay J. Brig.-Gen., U. S. A.

Morrow, Samuel Roy. 1st Lieut., Engineers, U. S. A.

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Nelson, Clarence L. Capt., Coast Artillery, U. S. A., Headquarters, 1st Brigade, A. E. F., France.

Neuman, David L. Maj., Engineers, U. S. A., 3d Engrs., Ancon, Canal Zone, Panama.

Neville, C. W. J. Commander, U. S. N. R. F.

Newhall, William Barrett. Capt., Engineers, U. S. A.

Newton, Jewett B. Capt., Field Artillery, U. S. A.

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Noyes, Stephen Henley. Capt., U. S. A., Aviation Corps, A. E. F., France.

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O'Connell, George P. Capt., Engineers, U. S. A.

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Oxer, George C. Maj., Engineers, U. S. A., A. E. F., France.

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Phipps, T. E. Capt., Engineers, U. S. A.

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Pioda, Albert W. Co. 1-B, E. O. T. S., Camp A. A. Humphreys, Va.

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Pratt, Arthur H. Maj., Engineers, U. S. A., Care, Chf. Engr., 2d Army, A. E. F., France.

Preston, Harry L. Capt., Engineers, U. S. A., 22d Engrs.

Price, Philip W. Lieut., U. S. A., Battery D, 3d F. A., A. E. F., France.

Prindle, Franklin C. Rear-Admiral, Civil Engineer Corps, U. S. N. (Retired).

Pritchard, J. C. 1st Lieut., Engineers, U. S. A., 26th Engrs.

Proctor, R. F. Lt.-Col., Quartermaster Corps, U. S. A.

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Quinlan, George A. Maj., U. S. A., 113th Engrs.

Quinn, John I. 1st Lieut., Engineers, U. S. A., A. P. O. 766, Mobile, A. E. F., France.

Quinn, Matthew F. Maj., Engineers, U. S. A.

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Rader, James W. 2d Lieut., Aviation Section, Signal Corps, U. S. A.

Rakestraw, C. L. 1st Lieut., Engineers, U. S. A., 4th Engrs.

Randolph, John Hampden, Jr. Capt., Engineers, U. S. A., 103d Engrs.

Randolph, Robert Isham. Maj., Engineers, U. S. A., 23d Engrs.

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Rathjens, George W. Lt.-Col., U. S. A., 313th Engrs., A. P. O. 795, A. E. F., France.

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Reed, Carl S. Maj., Ordnance, U. S. A.

Reed, Howard S. Capt., Engineers, U. S. A.

Reed, Paul Lyon. Commander, Civil Engineer Corps, U. S. N.

Reed, Percy Lawrence. 1st Lieut., Ordnance, U. S. A.

Rees, Bird Le Grand. Capt., Engineers, U. S. A.

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Ritter, Rollin. Capt., U. S. A., 130th F. A.

Roberts, Harry A. Capt., Engineers, U. S. A.

Roberts, Leo Bond. Lieut., Engineers, U. S. A., 25th Engrs.

Robertson, A. K. Lieut., Royal Anglesea R. E., No. 3 (Ry. Cos.), France.

Robertson, Fonzie E. Lieut., Field Artillery, U. S. A.

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Sawyer, Donald H. Lt.-Col., U. S. A.

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Scudder, Charles Morrison. Capt., Engineers, U. S. A., 107th Engrs., A. P. O. 734, A. E. F., France.

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Seage, Clarence E. Ensign, U. S. N.

Searight, George Peter. 1st Lieut., Engineers, U. S. A., Co. B, 27th Engrs., A. E. F., France.

Seelye, Seth H. Co. G, 23d Engrs., A. E. F., France.

Selander, John E. Maj., Royal Engrs., Care A. D. Rys., B. E. F., Italy.

Senior, Frank S. Maj., Transportation Corps, U. S. A., Care, Gen. W. W. Atterbury, A. P. O. 717, A. E. F., France.

Sessler, Grover C. Asst. Civ. Engr., U. S. N. R. F.

Seward, Oscar A., Jr. Capt., Engineers, U. S. A., 315th Engrs.

Sewell, John Stephen. Col., Engineers, U. S. A., Commanding Base Section No. 1, A. E. F., France.

Sexton, George F. 2d Lieut., U. S. A.

Seymour, Horatio. Capt., Quartermaster Corps, U. S. A., Constr. Div.

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Shankland, Ralph Graham. 1st Lieut., Engineers, U. S. A.

Shaw, Arthur Lassell. Capt., Engineers, U. S. A., 301st Engrs., A. E. F., France.

Shaw, Arthur M. Maj., Engineers, U. S. A.; Constr. Q. M., Mech. Repair Unit No. 305.

Shaw, Franklin Dickinson. Capt., Engineers, U. S. A.

Shearer, D. McD. Capt., Engineers, U. S. A., 604th Engrs.

Sheley, Horace W. Capt., Engineers, U. S. A., A. E. F., France.

Shepard, George Milson. Capt., Engineers, U. S. A., Commanding 2d Bn., Headquarters, 606th Engrs.

Sheppard, Norman K. Master Engr., Junior Grade, Headquarters Co., 313th Engrs.

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Sherman, Edward C. Lt.-Commander, Civil Engineer Corps, U. S. N. R. F.

Shibley, Kenneth. Capt., U. S. A., 403d Engrs.

***Sibert, William L.** Maj.-Gen., U. S. A.

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Sjovall, Arvid H. Capt., Quartermaster Corps, U. S. A., Constr. Div.

Skelly, J. W. Capt., U. S. A., Care, Chf. Engr., 3d Army, A. E. F., France.

Skinner, John F. Capt., Quartermaster Corps, U. S. A., Constr. Div.

Sleight, Reuben Benjamin. 1st Lieut., Air Service, U. S. A.

Sloan, William Griffith. Maj., Engineers, U. S. A.

Slocum, C. L. Capt., Ordnance, U. S. A.

Small, James H., Jr. Maj., Quartermaster Corps, U. S. A.

Smallman, R. A. Capt., Co. F, 25th Engrs., A. E. F., France.

Smead, R. C. Maj., Engineers, U. S. A. (*Unassigned*).

Smillie, Ralph. Lieut. (Junior Grade), U. S. N., U. S. S. *Massachusetts*.

Smith, Albert. Maj., U. S. A., 2d Bn., 309th Engrs.

* Awarded the Distinguished Service Cross.

Smith, Alexander Crawford, Jr. 1st Lieut., Engineers, U. S. A., Truck Co. No. 10, 23d Engrs., A. P. O. 774, A. E. F., France.

Smith, Charles E. Maj., Quartermaster Corps, U. S. A.

Smith, Chester Alexander. Capt., Sanitary Corps, U. S. A.

Smith, Chester K. Maj., Engineers, U. S. A.

Smith, Claire Howland Wallace. 1st Lieut., Engineers, U. S. A. (*Unassigned*), A. E. F., France.

Smith, Clarence Urling. Capt., U. S. A., Co. E, 107th Engrs., A. E. F., France.

Smith, Clarke Stull. Col., Engineers, U. S. A., Care, Chf. Engr., A. E. F., France.

Smith, Edward King. 2d Lieut., Signal Corps, U. S. A.

Smith, Everett C., Jr. Capt., U. S. A., 34th Engrs., A. P. O. 713, A. E. F., France.

Smith, Francis M. Maj., Engineers, U. S. A.; Commanding Officer, 51st Regt., T. C., U. S. A. P. O. 717, A. E. F., France.

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Smith, Layton Fontaine. Lieut., U. S. N. R. F., U. S. S. *Maine*.

Smith, Maxwell W. Maj., Engineers, U. S. A.

Smith, Richard B. Private, 32d Service Co., Meteorological Section, U. S. A., Detached Air Service, A. E. F., France.

Smith, Robert C. Maj., Quartermaster Corps, U. S. A.

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Snell, Edward Beniah. 1st Lieut., Engineers, U. S. A.

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Snyder, Frederic Antes. Col., U. S. A., 103d Engrs., A. P. O. 744, A. E. F., France.

Snyder, George Duncan. Capt., U. S. A., 102d Engrs.

Snyder, Hubert Earl. Capt., Engineers, U. S. A.

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Stanford, Homer R. Commander, Civil Engineer Corps, U. S. N.

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Stephens, Uel. Capt., Infantry, U. S. A., Co. D, 57th Inf.

Stevenson, Markley. Ensign, U. S. N. R. F.

Stewart, John. Lt.-Col., U. S. A., 323d Engrs.

Stewart, John T. Lt.-Col., Engineers, U. S. A.

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Stocker, Leslie W. 1st Lieut., Engineers, U. S. A.

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Taylor, William T. Staff Capt., Air Ministry, R. A. F., England.

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Torrance, William M. Capt., Engineers, U. S. A.

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Tracy, Herbert Herman. 1st Lieut., Engineers, U. S. A., Engr. Wagon Co. 4, 23d Engrs., A. E. F., France.

Travers-Ewell, Andrew. Capt., Care, Gibbs & Co., Antofagasta, Chile.

Treser, Albert Paul. Co. A, 605th Engrs., A. E. F., France.

Trimp, Allan Littell. 1st Lieut., U. S. A., 104th Engrs.

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True, Albert O. Capt., Engineers, U. S. A.

Trueblood, P. McG. Lieut., U. S. N. R. F.

Tucker, H. F. Ensign, U. S. N. R. F.; Navigator, U. S. S. *Aroostook*.

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Wright, John Bertram. Capt., Engineers, U. S. A.

Wrightson, William D. Col., Sanitary Corps, U. S. A.

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Yeo, W. H. W. Capt., Engineers, U. S. A.

Yereance, Alex. W. 1st Lieut., Co. F, 305th Engrs., A. E. F., France.

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Young, Charles C. 1st Lieut., Engineers, U. S. A.

Young, Frederick C. Capt., Engineers, U. S. A.; Adj't., 114th Engrs., A. E. F., France.

Young, George S. Capt., Engineers, U. S. A., 29th Engrs.; Executive Officer, G-2-C, 2d Army, A. E. F., France.

Zinn, George A. Col., Engineers, U. S. A.

MEMBERSHIP

(From February 7th to March 6th, 1919)

ADDITIONS

| MEMBERS | | Date of Membership |
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| AYER, JOHN. Executive Engr., Fay, Spofford & Thorndike, 308 Boylston St., Boston (Res., 11 Boylston Terrace, West Medford), Mass..... | Assoc. M. M. | Oct. 7, 1914 Jan. 14, 1919 |
| MEYER, CHARLES LOUIS. Pres. and Gen. Mgr., Concrete Eng. Co., 612 Omaha National Bank Bldg., Omaha, Nebr..... | Assoc. M. M. | Mar. 13, 1917 Jan. 14, 1919 |
| VOGEL, JOHN LEONARD. Designing Bridge Engr., Board of Public Utility Comms., State of New Jersey, Newark (Res., 163 Clinton Ave., Jersey City), N. J..... | Jun. Assoc. M. M. | Nov. 5, 1907 May 6, 1914 Jan. 14, 1919 |
| WOODY, NORMAN COOPER. Chf. Pilot Engr., St. L.-S. F. Ry., 623 Frisco Bldg., St. Louis, Mo..... | Assoc. M. M. | Jan. 17, 1916 Jan. 14, 1919 |
| WOOLLEY, WILLIAM JOHN MOORE. City Engr., Town Hall, Caulfield, Victoria, Australia..... | | Nov. 26, 1918 |

ASSOCIATE MEMBERS

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| BEILHARZ, WILLIAM EARNEST. Chf. Engr., Dallas Office, Truscon Steel Co., 738 Wilson Bldg., Dallas, Tex.... | Jan. 13, 1919 |
| BIRD, BYRON. 1602 Second Ave., North, Fort Dodge, Iowa. | Nov. 26, 1918 |
| CROSSON, WILLIAM HENRY. 1st Lieut., Engrs., U. S. A., Headquarters, 2d Bn., 20th Engrs., U. S. M. P. O. 717, Am. Exp. Forces, France; Address, 296 Chelsea Ave., Long Branch, N. J..... | Sept. 10, 1918 |
| DAVIS, NORMAN ENGLE. Res. Engr., Hudson Val. Ry., 16 Davis St., Glens Falls, N. Y..... | Sept. 10, 1918 |
| FARRINGTON, ARTHUR E. Chf. of Constr., State Highway Dept., Wellsboro, Pa..... | Jan. 13, 1919 |
| GAYLORD, RALPH WELLES. Care, Hawaiian Dredging Co., Honolulu, Hawaii..... | Jan. 13, 1919 |
| HILL, NORMAN HADEN. 1351 Monroe St., N. W., Washington, D. C..... | Jan. 13, 1919 |
| LOWELL, JOHN WESLEY, JR. Div. Engr., Promotion Bureau, Universal Portland Cement Co., 524 Frick Bldg., Pittsburgh, Pa..... | Jan. 13, 1919 |
| MOORE, WALTER, JR. Dist. Engr., Los Angeles County Road Dept., Maintenance Div., 1104 Hall of Records, Los Angeles, Cal..... | Jan. 13, 1919 |
| NICKERSON, EDWARD DOUGLAS. Civ. Engr., State Dept. of Eng., 1220 Eighteenth St., Sacramento, Cal..... | Jan. 13, 1919 |

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| PEMBERTON, JAMES REX. | Supt. of Sewer Constr., City of Flint, 729 Evergreen St., Flint, Mich. | Jun. Assoc. M. | May 2, 1911 Jan. 13, 1919 |
| RIBEIRO, GEORGE. | Head of Drawing Office, The Leopoldina Ry., Ltd., Rua da Gloria 36, Rio de Janeiro, Brazil. | | Nov. 26, 1918 |
| RUSSELL, ALEXANDER ALLEN MACVICAR. | In- specting Engr., Concrete Ship Dept., Emergency Fleet Corporation, 2712 Stuart St., Berkeley, Cal. | Jun. Assoc. Assoc. M. | May 5, 1908 Feb. 4, 1913 Jan. 14, 1919 |
| SALE, CLARENCE STANLEY. | Asst. to the Pres., The Railway Car Mfrs. Assoc., 61 Broadway, Room 2216, New York City. | | Jan. 13, 1919 |
| SIVASLIAN, HYRAND ARAKEL. | Eng. Dept., Goodyear Tire & Rubber Co., Akron, Ohio. | | Jan. 13, 1919 |
| STILES, THOMAS ALGEO. | Supt. of Constr., Cerro de Pasco Copper Corporation, Oroya, Peru. | | Nov. 26, 1918 |
| STOUT, BENJAMIN ELLIS WARREN. | Contr. Engr., The Midland Bridge Co., 2613 East 29th St., Kansas City, Mo. | | Jan. 13, 1919 |
| WENTZ, FOSTER PRATT. | 408 Wells Fargo Bldg., Port- land, Ore. | | Jan. 13, 1919 |

JUNIORS

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| LING, HUNG HSUN. | Care, Chinese Ry. Assoc., West Chang An St., Peking, China. | Oct. 8, 1918 |
| PIODA, FERNANDO CHARLES. | 337 Foul Bay Rd., Victoria, B. C., Canada. | Jan. 13, 1919 |
| THOMAS, MARVIN WATTERSON. | Care, Asst. Engr., Tex. & Pac. Ry., Fort Worth, Tex. | Oct. 8, 1918 |
| WATT, ROBERT FARQUHAR. | Structural Draftsman, Niagara River Bridge, M. C. R. R., Detroit, Mich. | Sept. 10, 1918 |

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ASSOCIATE MEMBERS

Date of
Reinstatement.

SAWYER, DONALD HUBBARD..... Jan. 13, 1919

SAWYER, GEORGE LOYAL..... Jan. 13, 1919

DEATHS

BAKER, HOLLAND WILLIAMS. Elected Member, May 7th, 1890; died February 18th, 1919.

DOUGAN, WILLIAM THOMAS. Elected Member, October 2d, 1907; died February 3d, 1919.

HORN, FRANK CHURCHILL. Elected Member, September 1st, 1903; died February 16th, 1919.

HUNT, RUFUS CAMERON. Elected Member, October 5th, 1904; died February 18th, 1919.

KNOWLES, CHARLES H. Elected Associate Member, September 2d, 1914; died February 20th, 1919.

MILLIGAN, ROBERT EDGAR. Elected Member, March 4th, 1914; died February 25th, 1919.

OSTRUP, JOHN CHRISTIAN. Elected Associate Member, March 4th, 1896; Member, March 1st, 1899; died February 28th, 1919.

SCHILLING, ALEXANDER CHARLES. Elected Associate Member, June 18th, 1918; died February 4th, 1919.

SLIFER, HIRAM JOSEPH. Elected Member, June 5th, 1907; died February 3d, 1919.

TOMS, JAY WILLIAM. Elected Junior, November 30th, 1909; died December 20th, 1918.

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INTEREST

(February 1st to March 1st, 1919)

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- (4) *Journal, Western Soc. of Engrs.*, Chicago, Ill., 50c.
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- (27) *Electrical World*, New York City, 10c.
- (28) *Journal, New England Water-Works Assoc.*, Boston, Mass., \$1.
- (29) *Journal, Royal Society of Arts*, London, England, 6d.
- (32) *Mémoires et Compte Rendu des Travaux Soc. Ing. Clv. de France*, Paris, France.
- (33) *Le Génie Civil*, Paris, France, 1 fr.
- (36) *Cornell Civil Engineer*, Ithaca, N. Y.
- (42) *Proceedings, Am. Inst. Elec. Engrs.*, New York City, \$1.
- (43) *Annales des Ponts et Chaussées*, Paris, France.
- (45) *Coal Age*, New York City, 10c.
- (46) *Scientific American*, New York City, 15c.
- (47) *Mechanical Engineer*, Manchester, England, 3d.
- (54) *Transactions, Am. Soc. C. E.*, New York City, \$12.
- (55) *Mechanical Engineering: Journal, Am. Soc. M. E.*, New York City, \$10.
- (56) *Transactions, Am. Inst. Min. Engrs.*, New York City, \$6.
- (57) *Colliery Guardian*, London, England, 5d.
- (58) *Proceedings, Engrs. Soc. W. Pa.*, 2511 Oliver Bldg., Pittsburgh, Pa., 50c.
- (59) *Proceedings, American Water-Works Assoc.*, Troy, N. Y.
- (60) *Municipal and County Engineering*, Indianapolis, Ind., 25c.
- (61) *Proceedings, Western Railway Club*, 225 Dearborn St., Chicago, Ill., 25c.
- (62) *American Drop Forger*, Thaw Bldg., Pittsburgh, Pa., 10c.
- (63) *Minutes of Proceedings, Inst. C. E.*, London, England.
- (64) *Power*, New York City, 5c.
- (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
- (66) *Gas Journal*, London, England, 6d.
- (67) *Cement and Engineering News*, Chicago, Ill., 25c.
- (71) *Journal, Iron and Steel Inst.*, London, England.
- (71a) *Carnegie Scholarship Memoirs, Iron and Steel Inst.*, London, England.
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- (74) *Transactions, Inst. of Min. and Metal*, London, England.
- (75) *Proceedings, Inst. of Mech. Engrs.*, London, England.
- (77) *Journal, Inst. Elec. Engrs.*, London, England, 5s.
- (83) *Gas Age*, New York City, 15c.
- (85) *Proceedings, Am. Ry. Eng. Assoc.*, Chicago, Ill.
- (86) *Engineering and Contracting*, Chicago, Ill., 10c.

(87) *Railway Maintenance Engineer*, Chicago, Ill., 10c.
 (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.
 (90) *Transactions*, Inst. of Naval Archts., London, England.
 (91) *Transactions*, Soc. Naval Archts. and Marine Engrs., New York City.
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.
 (98) *Journal*, Engrs., Soc., Pa., Harrisburg, Pa., 30c.
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.
 (101) *Metal Worker*, New York City, 10c.
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.
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 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.
 (109) *Journal*, Boston Soc. C. E., Boston, Mass., 50c.
 (110) *Journal*, Am. Concrete Inst., Philadelphia, Pa., 50c.
 (111) *Journal of Electricity*, San Francisco, Cal., 25c.
 (113) *Proceedings*, Am. Wood Preservers' Assoc., Baltimore, Md.
 (114) *Journal*, Institution of Municipal and County Engineers, London, England, 1s. 6d.
 (115) *Journal*, Engrs.' Club of St. Louis, St. Louis, Mo., 35c.
 (116) *Blast Furnace and Steel Plant*, Pittsburgh, Pa., 15c.
 (117) *Engineering World*, Chicago, Ill.
 (118) *Times Engineering Supplement*, London, England, 2d.
 (119) *Landscape Architecture*, Harrisburg, Pa., 50c.
 (120) *Automotive Industries*, New York City, 15c.

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